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"EUCOMIA ULMOIDES" OLIVER: A NEW GUTTA-PERCHA PLANT.

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(Specially trranslated, from the "Revue des Cultures Coloniales," for the Tropical Agriculturist.)

GUTTA-PERCHA is, as is known, produced principally from trees belonging to the Sapotaceæ and growing in sub-tropical regions. It is therefore interesting to kuow that a plant, belonging to quite a different botanical group and growing in regions with a temperate climate, can also yield gutta-percha. We refer to a species studied by M M. Oliver and Weiss and described in the bulletin of the Linnæan Society of London in 1892, under the name of the *Eucomia Ulmoides Oliver*. Having only incomplete specimens at his disposal that botanist was unable to make an exact study of the plant. However, he ranks the Eucomia among the Euphorbiaceæ, near the crotonoids, and notes, in the different organs of the plants, the presence of lactiferous vessels, the contents of which become particularly visible when, having broken a portion of the stalk or the leaf, one carefully separates the two parts. M. Weiss undertook the anatomical study of the stalk and leaves, more particularly the development of the lactifers. He affirmed their presence in great abundance in the "parenchyme cortical "* of the stalk and their resemblance to the vessels holding the latex of the *Euphorbiaceæ*. Having measured the proportion of elements soluble in chloroform in the cortical region, he obtained a yield of 3 per cent.

Having noticed the analogy that exists between the leaves of palaquium and those of the Eucomia, when on carefully breaking the leaves, one exposes the contents of the lactifers, we have been led to try to apply to the different organs of the plant, the procedure recommended by M. Jungfleisch for extracting gutta-percha from the leaves of palaquium. We experimented first on some fresh leaves of a single plant of the Eucomia in the *Jardin Colonial*. The leaves are 8 to 9 centimetres long and 4 to 5 wide. They are oval, pointed at the end, finely dentate, have short stalks, and in length resemble those of our common elm. Operating upon 20 grammes of dried leaves, we obtained 0 gr. 45 of products soluble in "toluene"* which corresponds to a return of 2 gr. 21 per cent. This return is poor, if one considers that the fresh leaves contain 70 per cent. of water. The bark seems to contain a notable proportion of matter produced by the lactifers. But the plant which we possess being still very young, we have not been able to take any branches away for examination. A second series of observations was made upon the fruits. The fruit is a samare, the length of it being from 3 to 3½ centimetres, and the width about 1 centimetre. 200 fruits weigh about 13 to 14 grammes. The extract of matter soluble in toluène has given us the following results:—1st attempt, 15 grammes soluble in toluène 4 gr. 09; 2nd 15 gr. gave 4 gr. 12. That is a proportion of 8 gr., 20 to 30 gr. of matter. This corresponds to a yield equal to 27·34 per cent. We operated on fruits not dried. The fruit contains a small proportion of water, equal to 7·4 per cent. The product obtained is of a brown colour with metallic reflections on the surface. Plunged in hot water, it becomes soft again, stretches out in thin flakes like gold beater's skin, and under pressure will take the impress of metal. In cooling it loses its suppleness and becomes quite hard.

We have submitted the samples to M. Lèaute, an authority on the subject, and he authorizes us to say that he considers them of good quality.....Experiments are being made in the Jardin Colonial as to the methods of propagating the plant, which is at present only known in the North of China. Seeds are uncertain and often slow of growth but cuttings seem to give the best results. Cuttings will strike root in any season, but spring seems to be the most favourable for budding... The plants has lived in the open air in Paris through the winter. Further experiments on the plant are being made which will determine if it would be worth while to extract gutta from the branches or the bark.

* [That is, the soft spongy cellular web which fills the spaces between the different fibres and tissues in the leaves, young stalks and fruit.—Ed. *T.A.*]

* ["Toluène" is a colourless liquid obtained by the dry distillation of Tolu's balm, a balm produced by a tree of the *myrosperme* genus.—Ed. *T.A.*]

COFFEE IN QUEENSLAND.

THE LATEST REPORTS.

Experiments with coffee growing have been made from time to time—often at long intervals—ever since the foundation of the colony. Thirty years ago the then Government tried to galvanise the industry into life by offering growers special concessions, but though small plantations were laid at Buderim, near Maryborough and other places, no one seems to have persisted in the cultivation either earnestly or extensively. One gentleman, near Mackay, has continuously grown a few acres of it for over 20 years, at time with very handsome results. During the past few years a wider interest has been taken in coffee culture. On the Russell River, near Cairns, Mr. W. R. Lewis has established the Mount Graham plantation. Some 16 years ago he visited Mackay and was much impressed with what he saw on the plantation of Mr. Costello (the gentleman first referred to); he decided to give coffee growing in his own district a thorough test. The result has been a complete success. He has now 15 acres under crop, and the Mount Graham coffee is to-day a well-established commercial commodity, finding a ready sale locally at a remunerative price. In the Cairns district there are now 400 acres planted as against 159 of the previous year, and 50 of the year before. At Kamerunga, a few miles from Cairns, at the foot of the coast range, there is a State nursery where may varieties of the tree have been carefully cultivated for years. To show how the industry is spreading, it may be mentioned that from the nursery during the year 1894, 110 lb. of coffee seed were distributed among 72 intending growers, while in 1896, 116 farmers received 1,300 lb. Besides this the nursery in the same time sent out 2,250 coffee plants, all the samples of coffee grown from them being of excellent quality. The progress of Cairns is best illustrated by the coffee output, which rose from 16,962 lb. in 1897 to 40,678 lb. in 1898, the majority of the trees bearing then for the first time. Three years ago planting at Mackay was, begun on the largest scale yet attempted in Queensland. The Mackay coffee Estate Company commenced operations, and has now some 100,000 trees planted. Altogether at Mackay there are now 115 acres under crop, which will begin to show returns this year. The old trees which had been bearing for years have been replaced with young plants. That coffee of a very superior quality can be grown at Mackay has been abundantly proved, as, apart from Mr. Costello's experience, for years past coffee trees at the Mackay State Nursery have borne crops which old and experienced planters, who have spent years in Ceylon, India, the West Indies, and Brazil, have publicly declared they never saw excelled considering the age of the trees. Another feature of the trees grown in North Queensland, which is maintained by experts to prove beyond all doubt the super excellence of the local conditions—temperature, soil, rainfall, &c.—is that they will bear full crops in their fourth year, whereas in other coffee-growing countries a full crop rarely appears until the tree matures, and that is, attains its full growth in its sixth or seventh year. It is affirmed that its early fecundity is neither detrimental to the quality of the coffee nor the subsequent life of the tree. North of the tropic line is generally considered the natural home of the coffee plant, but experience has shown that it can be cultivated much further south with almost equal success. In the neighbourhood of Maryborough, there are now about 300 acres planted; and the success which has attended its cultivation at Buderim Mountain has induced selectors on the Blackall Range to put in some trees.

Experiments there have shown that the climate and soil at certain altitudes are very favourable to their propagation. Recognising the importance of this growing industry, and the great scope the northern portions of the colony afford for its expansion, the department has procured the services of Mr. Howard Newport to instruct the planters new to the industry in the best method of planting, curing, &c. Mr. Newport has had 11 years' experience in India, where he managed a large plantation at Melrose, Yercand, in the presidency of Madras. He has also had considerable experience of coffee-planting in Ceylon Mr. Newport corroborates the testimony of Indian and Ceylon planters as to the eminently favonrable climatic conditions of North Queensland for coffee culture, and he brings Queenslanders the cheering news that, though the industry is yet only a very small affair in the colony, the most flattering reports have gone abroad respecting the quality of the coffee and the big field there is in North Queensland for the expansion of the industry. He says that planters in India have begun to look upon Queensland as a dangerous rival in the production of the finest-grade coffee, of which they at present are the largest producers in the world, and practically have the monopoly of that class of trade.

"Will coffee-growing pay?" is a question frequently asked. It is answered always in the affirmative by practical growers. What it will pay depends, as in all other industries, upon how economically it is worked, the quality of the article produced, and the market prices. It is only to be expected that where there have been so many isolated amateur efforts under so many different conditions there should be considerable diversity of opinion on a good many points. On one point all are, however, unanimous—that good coffee can be grown in Queensland, and that good yields can be confidently anticipated. What it will cost to grow is a matter that has not been settled definitely in such a way as to be capable of general application. It is generally admitted that it can be grown in a small way more profitably than on a large scale, where the question of labour enters largely into the consideration when the crop is ready for harvesting. So far, the areas harvested have been small, and the labour employed of different kinds. Whilst one man employed aboriginal labour, which is naturally cheap, others got through the whole of the berry picking with the help of their families. A child of about 12 years, it is said, can pick 25 per cent. more in a day than a man. But all men have not large families of young children, nor can aboriginal labour everywhere be found, and it is asserted that white adult labour would be too expensive for the work performed. In Inda, Brazil, Ceylon, and other coffee-growing countries there is abundance of cheap native labour. It is contended that if Queensland is to compete successfully with them the labour employed must also be cheap, so that it would seem that the labour of the Queensland coffee plantions of the future will have to be obtained, as in the case of the sugar plantations, from the Polynesian Islands. The experience of the Mackay Coffee Company during the next and following seasons should furnsih a good guide as to whether the coloured labourer is as useful and essential among the coffee trees as he is among the sugarcane. But whatever may be the profit in operations on a large scale, there is no doubt of coffee being "a poor man's crop." It is an easy one to grow. Mr. Newport and other experienced planters state that any man of ordinary intelligence can easily and quickly learn all that is necessary to plant and tend the trees, pick the crop, and cure it ready for the market. It requires no heavy labour, nor any very expensive mills and machinery. It keeps indefinitely, and to a certain extent improves with age. In one of a series of letters contributed to the "Queensland Agricultural Journal" on coffee cultivation, the manager of the Mackay Coffee Estate, an ex-Indian planter of very considerable experience, wrote as follows:—"The requisites necessary for the preparation of the product of the mill are so simple

and so unexpensive that they are within the reach of all." It must have occured to those who have followed these articles from the beginning that it is not necessary for every grower to erect a mill for the own crop. One mill in each district is ample for all purposes, as coffee in the parchment state will stand holding for an indefinite period, provided it has been sufficiently dried nor need the farmer apprehend that such delay will cause depreciation in its value, for the contrary is the case. The farmer in Queensland cau choose his own time for sending his parchment to the mill, where could either sell for cash, or have the article cured, packed, and shipped for him. The same principle is carried out in most of the coffee-growing countries, and should answer equally well here." Of the great profits to the small grower there seems to be no room for two opinions. If, as before observed, he has a family of active children, he needs but little paid labour in the berry-picking seasou. On this point, Mr. T. A. Bromley, Pialba, in a paper read before an agricultural conference held at Rockhampton last year, said :—"I have five acres under coffee, and the reason I have not more is that I am testing coffee-growing experimentally on approved liues. . . . Now, about labour, and that is a great point. My quiver is full, and I have a big little family. When it comes to picking with the assistance of a few children from round about, I can slip through the job very well. Children are by far the best pickers." In giving an estimate of the money return that might be expected from coffee-growing, he continued:—"By taking the price mentioned as a basis (10d. per lb) the net return per acre would be over £50. Of course, it would not do to consider that a state estimate, as in practice you might get a long way below it. However, I am satisfied there is no other crop will pay so well, not even sugar." Dr. Thomatis, of Caravonica Park, Cairns, who has been growing coffee for years, and who, eight months ago, was awarded a special prize for his coffee at the Marseilles Exhibition, is very emphatic on the subject of profits. In a paper he read at the agricultural conference held in June last at Mackay he said :—"A small farmer with a growing family can grow a few acres of coffee with the certainty of realising from £30 to £40 per acre, without tbe necessary of employing labour outside his own family."

As very little is generally known about coffee growing, I will here give an idea of what amount of capital a man would require arriving in Queensland prepared to embark in the industry for the purpose of making a living out of it. The cost of securing the land would very considerably, according to the conditions under which it was taken up—as a homestead selection, agricultural farm, or freehold land purchased outright. There is land coast open for selection all along the Queensland coast. The Brisbane Land Commissioner informed me a short time ago that there were 50,000 acres of scrub land on the Blackall Range, within 50 miles of Brisbane, suitable for coffee or fruit growing, and open to selection at 2s 6d an acre as homestead leases to the first persons that came along. A few miles back from the coast at Mackay, Cairns, and other northern ports, freehold land may be purchased from £2 an acre upwards. Excellent sites sheltered from the strong winds which prevail at certain periods of the year can be chosen on the slopes of the coast hills which, from their irregular conformation, are unsuitable for general agriculture, but which are all that could be decided for coffee culture. Taking the case of the site chosen, being freehold land, it may be put down as a general average that £3 an acre would be the cost of purchase. The cost of cutting and burning off the scrub would not exceed £4 an acre. To grub out the heaviest stumps might take £3 or £4 more an acre, but this operation, to a man of limited means, is o a certain extent unnecessary, as the stumps may e allowed to rot away, as they will do in time. ne of the illustrations shows the dead timber still anding in the plantation. Digging holes for the ants would increase the outlay by an other £4. The whole cost of preparing the plantation would be about £12 an acre. Taking for instance a plantation of 30 acres the expenditure would be something like the following :—

Cost of land, about	£90 0 0
Clearing (if heavily timbered) and planting, about	360 0 0
Farming appliances, say	30 0 0
Fencing, say	60 0 0
Total cost of planting 30 acres	540 0 0

There would be other contingent expenses; a dwelling-house, &c, a couple of horses, and other items the cost of which would depend largely on the settler's taste and disposition; and the expense of living, keeping down weeds, and tending the young trees for three years until they began to bear would also have to be taken into consideration. Of course if he has been accustomed to mannal labour much of the above outlay would be avoidable with the help of one or two kanakas or a couple of sons fit for field work. Opinions differ as to how many trees should be planted to the acre; the estimates range from 700 to 1,100. Experienced planters state that 1,000 are not too many where the soil is rich, the land well cleared, and economy of space has to be cousidered. At the end of three years the first berries appear, yielding approximately one-fourth of a full crop. In the fourth season abont a half-crop may be expected, and in the fifth year the trees are in full bearing. Eeach three will yield 2 lb. of parchment coffee, which means for 1,000 trees 2,000 lb. of parchment. Taking the mean between the various estimated costs it may be set down that the cost of picking will amount to ½d per lb. of berry from the tree, or to 3d. per lb. of parchment coffee. During the past few years the selling price of the coffee locally has ranged from 7½d to 12d. per lb; as importers pay 9d per lb. on the average for inferior coffee from Fiji, it seems a fair average to estimate 9d as the ruling price of the local product, and at that figure European merchants have offered to buy Cairns and Mackay coffee in unlimited quantity. This would leave balance of 6d per lb. to the producer, which, at a yield of 2,000 lb per acre is £50. Out of this return all incidental expensies would have to be deducted. Discounting all the estimates, disregarding the fact that growers in North Queensland have netted from £40 to £60 per acre, fallowing for an increase in the expenditnre, a fall in the price of coffee, and setting the net gain as low as £20 per acre, then the owner of a 30-acre plantation would find himself at the end of five years in receipt of an income of £600 a year. One ceases to wonder at the enormous fortunes Indian and Brazalian planters have made.

Last year Queensland grew only about one-fifth of the coffee consumed in the colony, so that the intending planter has not only the balance of the home consumption to supply, but he has open to him the whole Australasian market. There is a big future ahead of the indnstry in Queensland. The local conditions cannot be snrpassed anywhere, and there is plenty of available cheap land. The trees bear earlier and heavier crops than in other coffee-growing conntries; the foreign planter opens his eyes in astonishment—it is not in his experience: and the plant so far has been free from the dreaded leaf disease which has played havoc with the plantations in India, Brazil, Arabia, Ceylon, and other countries. The growth of the plant in Australia gives new experience owing to its adaptability to soils and climates to which in the previous history of the tree no parallel can be shown. Finally, the climate is healthy; yellow fever and other epidemics common in other countries are unknown; and the planter lives in the midst of British civilisation surrounded by his own countrymen.—*Cydney Mail.*

RHODESIA AS AN AGRICULTURAL COUNTRY.

By Mr. M. A. Lingard, Secretary For Agriculture.

Anyone who has travelled through Rhodesia, and regarded it from the point of view of a practical farmer, cannot fail to recognise that whatever attractions it may possess in the shape of its minerals, it has undoubtedly vast possibilities in the way of agricultural industries. Too many observers have been content to base their opinion upon a hasty journey through the country by stage coach, and have come to the conclusion that because so little land is actually under cultivation, it is not as a whole fitted for farming. It must not be forgotten, however, that Rhodesia had had its full share, if not more than its share, of actual difficulties and obstacles to progress; and the scarcity of stock suited to arable cultivation has been kneely felt. The locust disease fungus will, it is hoped, do much towards abating the locust pest; the native troubles are a thing of the past, and rinderpest is rapidly disappearing from our stock. Now that the country is in a more settled state, and the conditions of existence are becoming day by day more easy, alike to the farmer and the artisan, there is good reason for the belief that a steady and increasing demand will be created for the produce of the soil, which will stimulate the agricultural industry of the country. Another result of the unsettled condition of the country, and the drawbacks which have had to be encountered, has been that farming, so far as it was carried on, was regarded more or less as a speculation, and the prices realised at times for forage, etc., have been so high that the money that would otherwise have been re-invested in agricultural wants have been diverted to other channels.

In making a general review of the agricultural outlook of Rhodesia, the most important feature to be considered is of course the nature and formation of the soil. Generally speaking, the country may be described as both fertile and well watered, and admirably adapted, not only for breeding stock of all kinds, but also for raising cereals and other produce of the tropical and sub-tropical climate. That this is no mere theory, is amply proved by the results attained by the natives, whether Mashonas or Matables. These tribes were the possessors of vast heards of cattle, which roamed about on the abundant pastures; and though their equipments for tilling the ground were necessarily of the rudest kind, they had no difficulty in raising mealies, sweet potatoes, rice, beans, tobacco, and in fact all kinds of produce. How much more than can be done by skilled agriculturists with all the latest farming appliances, a requisite amount of capital, and a sufficiency of native labour? With a comparatively small capital an energetic farmer should have no difficulty in earning a comfortable livelihood for himself and his family, and making provision for the future; that is if the farmer is prepared to put his own hand to the plough. Unfortunately in the past our farmers have shown a tendency to rely too much upon native labour, and have not always given the requisite amount of superintendence, and the natural result is that the crops were neglected or improperly handled.

It has been asserted by some critics that owing to tho long duration of the dry season in this country the effects of drought would be certain to discourage any serious attempt at farming. But on examination, this argument falls to the ground. With a soil which contains so much lime, and is formed on a granite bed the effects of drought are not so keenly felt as might be anticipated, and the decay of the rank vegetation which grows so abundantly forms an excellent manure for the soil, and leaves the ground ready for cropping without the aid of artificial dressing. With such natural advantages as are possessed by Rhodesia, as regards both soil and climate, a thorough system of agricultre, assisted where necessary by irrigation, should yield good results, equal to those attained in other countries, such as Canada or Australia. Little has yet been done in the way of cereal growing as the demand has necessarily been limited. Most of the oats and barley grown here have been used for forage, which at present yields a handsome return. The only kind of agricultural pursuit that has been gone into on any considerable scale is market gardening, and here the results have been very gratifying. If other colonists were to pay a visit to the markets of Bulawayo and Salisbury, they would probably be surprised to note the extent and variety of the crops raised, and their general excellence in quality. At present the market gardens are principally carried on by Indians in the neighbourhood of our large towns but with the near development of the mining resources of the country there is still scope for a further development of this remunerative resource, with which poultry and dairy-farming can be carried on at the same time. More attention might also be paid to fruit growing in a region the climate of which is so admirably adapted to almost all kinds of sub-tropical and tropical fruits. This is a want that is very much felt throughout the country.

It is somewhat difficult to present a sketch of what kind of cereals and other crops would thrive best in any particular locality, but after paying a visit to Mr. Rhodes's estate at Inyanga, in the Umtali district, one is left in no doubt that with a plentiful supply of water, farming on a systematic basis can be successfully carried on, both as regards cereals, vegetables, and fruits. As regards the pastoral industries, it must be admitted that since the conquest of the country many serious obstacles have had to be overcome. The various diseases and troubles to which stock is subject in this country have quickly developed and spread throughout the teriritory, but with the measures that have been adopted by the Government to stamp out rinderpest and pleuropneumonia, together with the able advice of the Veterinary Department of the Cape Government, which is always at our disposal, there is every reason to hope for better things in the near future. It is not easy to pronounce more definitely on this important subject, as qualified men find it difficult to arrive at any definite conclusion as to why stock in this country should be so susceptible to so many diseases. However, it is to be hoped that with the introduction of a stronger and purer breed of stock the cattle will be able to throw off many of the minor ailments. There seems to be no question that the cattle reared by the natives are much more liable to many of these troubles than stock bred in the south or elsewhere, and doubtless this is due largely to the in-breeding practised by the Kaffir tribes. Indeed, it is not unlikely that this has proved a source of weakness in the past, and that to it may be ascribed the rapid transmission of the fatal scourges which have carried off so many cattle and horses. The remedy appears to lie in the importation of a better and hardier class of stock, which I hope will be undertaken at no distant date.—*Cape Times.*

THE ALKALOIDAL CONTENTS OF CINCHONA.

According to an article appearing in the *Journal de Pharmacie et de Chimie*, the following are the ususl limits of alkaloidal content in various groups of bark:—1. Succirubra from Java, 6 to 8 per cent. of total alkaloid; quinine sulphate, 2 to 3 pea cent. 2. Loxa, from St. Thomas, 5 to 6 per cent. of tota alkaloid; quinine sulphate, 2 to 2½ per cent. 3 Loxa, from Nilgiris, 4 per cent. of total alkaloids 1 to 1½ per cent. of quinine sulphate. 4. Calisaya from Bolivia, 5 to 6 per cent. of total alkaloids; 3 to 4½ per cent. of quinine sulphate. There is room for Nilgiri bark to improve, and it is to be hoped that one effect of Mr. Standen's recent visit to Java will be an increase in the alkaloidal content of Indian grown cinchona.

REMEDIAL MEASURES AND INSECTICIDES.

By E. E. Green, Government Entomologist.

(*Concluded from page 300.*)

Kerosene Emulsion.—Soap is often combined with other ingredients. Of these kerosene emulsion is the best known and most widely used. As its efficacy and its effect upon plant life very greatly depend upon the preparation of the mixture, great care should be taken to accurately follow the directions. The formula in general use is:—

Soap	½ lb.
Kerosene	2 gals.
Soft water..	1 gal.

'Dissolve the soap in the water heated to boiling, then add the kerosene (to the hot mixture), and churn it until a creamy fluid results, which thickens on cooling, and adheres to glass without separating into oily particles.'

Whale-oil soaps are preferable, but any kind may be used. I have personally made a very successful emulsion, employing the common country soap, which seems to be particularly well adapted to retaining the oil in an intimate mixture, and which, in this combination, loses its own objectionable properties. The most important part of the process is the *churning*. This must be most thoroughly carried out. It can be satisfactorily managed by repeatedly drawing up and expelling the mixture through an ordinary garden syringe or a force-pump. A more lengthy method is to stir the mixture vigorously with a whisk of twigs. The liquid should be boiling hot during emulsification, and then, if kept in a cool place, it is said to last for a year or more without separating. If insufficiently churned, the mixture will afterwards become separated, and the oil collect at the top. A properly compounded emulsion will mix with water in any proportions.

For use against scale insects a strength of one part emulsion to ten of water is found to be effective. As in all preparations of which petroleum is an ingredient, it can be more safely used on cloudy days. When used in hot sunshine, it is liable to burn the foliage and injure the tender shoots of the plant, but the danger of injuring is much less with a properly prepared emulsion than with mechanical mixtures of kerosene and water. Mr. Marlatt, in some 'Notes on Insectides,'* gives the following particulars of experiments which show that kerosene emulsion can be used of considerable strength without causing appreciable injury to the plants. But it cannot be recommended for general use at a greater strength than mentioned above. Mr. Marlatt writes: 'About the 1st May, when the foliage was in the vigour of its early growth, a number of plants—peach, Japan quince, elm, pine, and strawberry—were treated with the following strengths of kerosene and whale-oil soap emulsions, made after the standard formula: Diluted (1) with 2 parts of water, (2) 4 parts of water, (3) 9 parts of water, and (4) 14 parts of water, or the emulsion at ⅓, 1-5, 1-10, and 1-15 strength. The application was very thorough, and the limbs and twigs were thoroughly wetted by immersion in the insecticide. The treatment was made on a very bright, warm day, in the early afternoon. No rain occurred for four days, after which there were heavy rains. No injury whatever developed in the case of the pine, strawberry, and elm with any of the strengths used. With peach the injury was trifling, a very small percentage, perhaps one or two per cent, of the leaves turned yellow and fell to the ground, but I am inclined to believe that this was merely the normal spring shedding of the leaves, which is seen in nearly all plants. In the case of the Japan quince, however, with the two stronger mixtures, namely, those with one-third and one-fifth kerosene emulsion, a few yellow spots apear on the leaves, and later, upon handling the limbs treated with the strongest mixture, about one-fourth of the leaves were found to fall off readily. These leaves, while looking comparatively healthy and green, had evidently been injured more than their surface appearance indicated. With No. 2 this peculiarity was almost unnoticeable, and with Nos. 3 and 4 no injury whatever was shown, nor did any further injury manifest itself throughout the season in the case of any of the plans treated. These experiments would indicate that the kerosene emulsion can be applied in much stronger dilution to tender foliage of growing plants than has hitherto been supposed.'

On the other hand, there are well-authenticated reports of plants seriously injured, or even killed, by the use of too strong a mixture, and the application during sunny weather is attended with danger. In my own experience I have found the tender shoots on a recently pruned tea bush to be completely killed back by a comparatively weak mixture applied during sunny weather.

When the foliage of a plant is attacked, the applications should be made by means of a spraying machine. In the case of pruned trees, when the pest affects the bark only, the liquid can be applied with a brush or a piece of rag to the stems and branches. Care must be taken that the liquid is not used in sufficient quantities to run down and saturate the roots of the plant, or grave injury may result. When employed with proper precautions, there is no doubt that we have in kerosene emulsion a very valuable remedy against scale and other insect pests.

Milk may be substituted for the soap in the manufacture of kerosene emulsion. The formula given by Hubbard is:—'One part milk (sour milk is said to be as suitable as fresh for the purpose), to two parts kerosene. Heat the milk nearly to boiling and mix with the kerosene. Churn the mixture violently until a thick creamy fluid is obtained. For use against scale insects dilute with nine or ten times the quantity of water.' I have been unable to find any definite statements as to the comparative effectiveness of the milk and soap emulsions. It is possibly a question of cost. In some countries a gallon of milk may be cheaper than half a pound of soap; but in most places it is probable that the balance of advantage will be on the other side. The active insecticidal properties of soap itself must surely be an additional advantage.

Kerosene.—Much diversity of opinion exists as to the use of pure kerosene or a mechanical mixture of kerosene and water. It is undoubtedly effective as an insecticide.

But in to many cases it is equally fatal to plant life. Reports are very conflicting. In some cases spraying with the undiluted oil has been unattended by any injury to the tree, while particularly successful in killing the scale. In other cases even large trees have succumbed under the treatment. One cause of injury is said to be the collection of oil at the base of the tree, the roots being apparently much more sensitive to injury than the exposed parts. As a precaution, earth should be banked up round the base of the tree, and only sufficient oil should be used to moisten the surface of the foliage and bark without any surplus to run down the stem.

Mixtures of kerosene and water have been largely mployed in America, and elaborate machines devised for ensuring the proper mixture of the two ingredients. But under any circumstances their effectiveness does not compare favourably with a properly compounded emulsion.

Referring again to one of Mr. Marlatt's reports,* I find it stated that 'kerosene mixed with water is not nearly so powerful an insecticide as the kerosene soap emulsion. It does not remain nearly so long on the plant, and is not nearly so effective an insecticide at the same strength of oil. The heavier soap or milk emulsions kill more effectively, which is, perhaps, explained by the heavier liquid actually

* *Insect Life*, vol. vii. p. 116.

* *Bulletin*, No. 9 (New Series), U.S. Department of Agriculture (Division of Entomology).

bringing more oil in contact with the insect, and also by its greater permanency.' Taking everything into consideration, neither kerosene, nor mixtures of the oil and water, can be recommended for general use—at any rate in the Tropics.

Resin washes.—These are used extensively in California to remove scale insects from fruit trees. The formula (taken from *Bulletin*, No. 9 of the U.S. Department of Ariculture) is as follows:—' The summer wash usually contains twenty pounds of resin, five pounds of crude caustic soda (seventy-eight per cent.), or three and a half pounds of the ninety-eight per cent., and two and a half pints of fish oil. The winter wash cantains thirty pounds of resin, nine pounds of crude soda, and four and a half pints of oil. The ingredients are boiled in about twenty gallons of water for two or three hours, hot water being occasionally added until fifty gallons of solution are made. This, for both formulæ, is diluted to one hundred gallons before application to trees. Greater efficiency is believed to come from long boiling of the mixture, and it is preferably applied hot. It is used on deciduous trees for the black and San José scales, and on citrus trees for the red and black scales; but the dense foliage of the latter renders thorough spraying difficult except for young trees, and fumigation is much preferred. An improperly made resin wash is also apt to spot the fruit of the orange.' I have no personal experieuce of either this or the following insecticide.

Lime Salt and Sulphur Wash.—This has been employed against the San José scale in America. Though undoubtedly effective in some parts of the country, it appears to have completely failed in others. Mr. Marlatt writes :—' Our experience with this wash in the East (Eastern States) had thrown doubt on its real efficiency as an insecticide, and it has been clearly demonstrated that under the climate conditions east of the Alleghanies it is almost valueless. In California, however, after a careful study of the facts in the field, I am compelled to admit that the demonstration of its usefulness against the San José scale is complete, and the benefit of its application to orchards is most manifest. In the vicinity of Pomona, California, unsprayed orchards were badly infested with San José scale, while in adjoining sprayed orchards the scale was entirely killed, and the trees were rapidly recovering and showing vigorous and healthy new growth. In contiguous orchards also of the same kinds of trees, similarly treated so far as cultivation is concerned, the trees which had been subjected to yearly spraying were at least one-third larger than untreated trees. This wash is of value also as a fungicide, protecting stone fruits from leaf fungi, and is also a protection against birds, the Common California linnet doing great damage to buds in January and February. The wash is almost invariably made and applied by contractors, and costs about five cents per gallon applied to the trees. It is a winter application, being applied in January and February.

'Along the coast region and in Northeru California, where moisture conditions prevail, this wash is very much less successful, bearing out somewhat the experienced of the East, and doubtless explained by the similarity of climate iu the districsts mentioned with that of the Atlantic seaboard.

'In making this wash the chief consideration seems to be prolonged boiling. The wash itself is practically a sulphide of lime, with much free lime and salt carried with it. Prolonged boiling will result in taking up temporarily additional sulphur, and will perhaps add to its caustic properties if it is applied very hot; on cooling, however, it reverts to the simpler tri-or bi-sulphite of lime. The proportions of the ingredients and the method of combining them vary slightly in different sections. The following is the ordinary formula: Unslaked lime. 40 pounds; sulphur, 20 pounds; salt, 15 pounds. One-fourth of the lime is first slaked and boiled with sulphur in 20 gallons of water for two or three hours; the remainder of the lime is slaked, and together with the salt, is added to the hot mixture, aud the whole boiled for half an hour or an hour longer. Water is then added to make 60 gallons of wash. This wash is applied practically every year, or as often as the San José scale manifests itself in any numbers.'

Carbolic Acid.—Crude carbolic, phenol, Jeyes' fluid, and similar compounds, all have insecticidal properties. Carbolic acid itself has been found inefficient except when applied in such strength as to seriously damage the plants. I find that phenol and Jayes' fluid (which appears to be much the same thing) are effective against *Orthezia*, 'mealy bugs,' and most species of *Lecanium*. A mixtnre containing 1 part of Jeyes' fluid to 20 of water, applied to a Thunbergia bush attacked by *Orthezia*, was fatal to more than 90 per cent. of the insects, but resulted in the death of the terminal buds of the plant. It had no bad effect upon the more mature leaves and shoots. The applicatiou did not, however, prevent the subsequent hatching of the eggs in the ovisacs of the dead insects. Weaker solutions were proportionately less effective.

In a 'Report on the Green Scale Bug, *Lecanium viride*,' published in 1886, I have mentioned that phenol applied to the ground around the roots of the coffee tree appeared to cause the disappearance of the scale. But subsequent experiments have not corroborated this result, and I must suppose that the apparent benefit in the earlier experiment was due to some other cause. Single experiments are practically nseless. They are liable to be vitiated by adventitious circumstances. Until similar results have been obtained from repeated experiments, no confidence can be placed in any treatment.

Tobacco Water.—'Steep 5 lb. of refuse tobacco (stems, *&c.*) in 3 gallons of water for three honrs. Strain the decoction and add sufficient water to make 7 gallons.' The mixture will kill soft-bodied species that are unprotected by a covering scale, such as *Lecanium viride*, *Pulvinaria psidii*, and *Dactylopius citri*. It has little or no effect against the *Diaspidinæ*.

Lime Water.—In the early days of the 'green coffee bug' I used a very thin wash of quick-lime aud water. The mixtnre is inconvenient or difficult to apply as a spray, as it quickly clogs the nozzles and valves of the machine. I applied it with large brushes to the affected coffee foliage, and it was certainly fatal to every insect with which it came in contact. The bugs turned from green to a bright orange colour within five minutes of the application. But many individuals necessarily escaped, and the benefit was only temporary. No damage to the trees was observed, but the lime had such a caustic effect upon the hands and arms of the coolies employed in the work that it had to be discontinued.

Strawson's Mixtures.—I have recently had the opportunity of experimenting with a mixtnre supplied by the Strawson Company for nse against the Tea-mite, and have found it very effective against scale insects of all kinds. It is one of the few insecticides that I have found of real value against *Orthezia*. Applied as a spray in the strength of 1½ lb. to 4 gallons of water, it not only kills this insect, but prevents the hatching of the eggs also. This is apparently effected by the blocking of the apertnre of the ovisac, and so preventiug the emergeuce of the young insects. The mixture (as snpplied) is of a soapy nature, and it is the soap that is probably the active agent in the destruction of the scale insects. The ingredients are naturally kept secret by the manufactures, for which reason I am nnable to recommend its use as a spray for tea duriug the plucking season, but for the removal of scale insects npon other trees it will be found of value, and I have frequently used it advantageously to clean the stems of *Pruned* tea. It is particularly effective also against the ants (*Cremastogaster Dohrni*) that give such trouble by building their nests in the tea bushes. These nests always enclose a colony of scale insects (usually *Lecanium formicarii*), and to prevent the recurrence of the ants it is most necessary to get rid of the bugs that attract them. For application to

the stems of trees a large paint brush can be used in place of the spraying machine.

McDougal's Insecticide Wash.—This is another very useful patent insecticide, also of a soapy natuie. As the ingredients are kept secret, the same objection applies to its extensive employment upon tea plants. It is eqnally effective against scale insects. The two mixtnres (Strawson's and McDougall's) were tested upon *Orthezia* with similar benefical results. It is used as a spray.

The above two insecticides may be safely employed 'against green bug' 'or mealy bug' on coffee, and would be fonnd very benefical in cbecking these pests *where they are confined to a small area.* The treatment wonld be too expensive over a large acreage, and would be useless unless applied very thoroughly.

Adhatoda.—A decoction made by steeping the leaves of *Adhatoda vasica* (an Indian plant) in water is said to have proved benefical against varions insect pests in India, but I can find no record of its effect npon scale insects. Dr. Watt (Reporter on Economic Prodncts to the Indian Government), who first brought into notice the properties of the plant as an insecticide, states that it has a distinctly paralysing effect upon many insects. But he appears to have found it unsatisfactory and uncertain in general use. The plant grows in Ceylon. In Trimen's *Handbook cf the Flora of Ceylon* it is said to occur in tbe 'low country, common in hedges and waste places, especially in dry regions, but usually planted, and scarcely a native.' I obtained a few leaves and made a strong decoction from them, The amount of material was insufficient for extensive experiment, but leaves affected by various insect pests were dipped into the mixtnre. I was surprised to find it absolutely ineffectual. Even such soft-bodied insects as aphides, when thorougbly wetted with the mixture, were as lively as ever tbe next morning. Possibly the Ceylon-grown plant does not acquire the insecticidal properties noticable in the Indian plant.

It may here be as well to mention a few other supposed remedies for the cure of scale bug, that are really quite valueless for the purpose. Tbe benefical results that have been attributed to tbem are probably due to some fortuitous circumstance, such as the treament having been applied at a time when the pest was declining from natural causes. Such errors of observation bave led to much waste of time and money.

The application of 'Mana grass' *(Andropogon nardus)*, was at one time considered a cure for the coffee bug *(Lec. coffeæ)*. Nietner, in his *Enemies of the Coffee tree*, mentions that it was customary to bind the grass ronnd the stems of the trees. I have repeatedly tried this plan, at various times of the year: I have tied the grass round the stems as directed, have spread it on the ground, and strewn it over the foliage. But in no case have I been able to observe the very slightest benefit from its nse.

Soot is another article that has been greatly overrated as an insecticide; and wood ashes may fall under the same category. These substances are, doubtless, useful in dealing with slugs and snails, their astringent and absorptive properties acting upon tbe mucous surface of such animals; but when applied to dry insects, such as caterpillars and scale bugs, they fail to adhere, or, when adhering to act in any way prejudicial to the iusect.

Lime, when applied dry, has little or no effect, unless there happen to be moisture upon the insects. Even then its action will be very partial and unsatisfactory.

Powdered sulphur is also quite useless against scale insets.

Many other substances have been made the subjects of experiment; but, as they are eitber far too costly or otherwise impracticable it is useless to enumerate them.

In tbe foregoing notes I have endeavoured to gather together tbe most reliable information on tbe subject of insecticides applicable to the treatment of Coccid pests. I present it to my subscribers, hoping that from amongst the various processes some treatment may be found to suit any case that may come under their notice.

INDIGO—A THREATENED INDUSTRY.

TO THE EDITOR OF THE "TIMES."

Sir,—My attention has been drawn to your special article on the above subject in your issue of the 4th inst., and to a letter in your issue of the 7th inst. from Messrs, Mewburn and Ellis, wbo give some details and comparative statements which require correction.

The indigo industry in India has up to the last few years occupied an almost anomalous position in this century of scientific progress an invention. Cultivation and manufactnre have remained practically tbe same as they were at the end of tbe last century.

The industry has, on the whole, been a paying one nntil this recent competition of an artificial product, and planters as well as agents were content to let things remain as they were. Tbere bave been chemists of an inventing bend of mind who have of late years occupied themselves with indigo manufacture and endeavoured to improve the same and increase the yield of dye from the raw material. But the encouragement they received has been too limited and was confined to a few individual planters. The industry generally, as well as the financing agency houses and the buying trade discouraged all improved methods of manufacturing processes necessitating the use of chemicals, and indigo known to have been made by any such improved methods was prejudiced at tbe indigo sales, if not altogether boycotted, so that enterprising planters lost courage and dropped all improvements in manufacture, even those of established merits.

The buying trade had also, np to lately, rested npon a most primitive basis of buying, dating also from the last century; valuations were and are still being made on comparison with standard samples of certain supposed values, and the buying trade was therefore suspicious of any alterations in the methods of mannfacture which might produce an equally good looking article bnt of perhaps less dyeing value.

All this is now rapidly changing. The indigo industry is ripening, snd is now more prepared than it was a few years ago to benefit from the scientific progress of our century.

Tbe buying trade is more and more abandoning the buying on comparison with standard samples, and buys now to a great extent on analysis, paying a certain amount per unit of indigotine, which varies sligbtly according to the mechanical conditions of the paste.

Indigo planters have rallied together in face of tbis threatening competition, are now amploying distinguished chemists, and are taking practical steps to improve their methods of cultivation and manufacture.

The financial agency houses are realizing the seriousness of the situation, and are taking the lead to help their constituents in tbe only way in whicli they can be helped—viz., to establish experimental factories where improvements in manufacture and cultivation can be worked out and tested.

It is not generally known that only about one-tbird of the dye in the plant is obtained by the ordinary methods of manufacture, and that, moreover, waste to the extent of 20 per cent. of the ultimate outturn occurs therein.

There is, tberefore, an ample margin for improvement in the manufacture alone, besides the progress which can be made by improved methods of cultivation and drainage and the use of new and selected seed.

The cbemistry of indigo manufactnre is till somewhat obscure; the dye in the plant is not present in a merely extractable state, like theine in tea leaves, but has to be developed from certain basio products, wbich is most profitably done by a prolonged fermentation of the plant, the agency being then microscopic life. This has made improvements in manufacture difficult, for chemists are rare who are conversant with and thorougbly understand the conditions of low microscopic animal and vegetable life, and who in addition possess the necessary perseverance, the necessary inventive power and gift, to devise experiments, to carry tbem out, and to interpret correctly the results. But such chemists will doubtless be found, and the benefits which the industry will derive from their work will be more

important and wide-reaching than even the most sanguine of planters hope for at present. One of the leading agency houses is already fitting out one of their factories in Behar to test next season a new process for which an outturn or more than double the quantity of dye is claimed, and, in my opinion, improvements will not even stop at this.

Messrs. Mewbourn and Ellis are therefore wrong in thinking that the cost of making indigo in India will not decrease in the same proportion as they expect the cost of the artificial indigo to decrease. The cost will, on the contrary, decrease to an extent which will enable the natural indigo industry to meet the competition successfully, and come out of it victoriously.—Yours obdient servant,

EUGENE C. SCHROTTKY.

Wiesbaden Villa, Sonneck. October.

PLANTING IN THE GOLD COAST.

The annual report for 1898 from the Gold Coast Colony puts in some very strong pleas for railways. With improved transport we are assured the output of rubber could be trebled, money would be saved, and better employment could be found for human beings than using them as beasts of burden—for at present the rubber has to be carried to the coast on men's shoulders. The export of timber is further handicapped by the lack of transport facilities, and that with such facilities more trade might be done is evidenced by the increase in the timber business in those districts which have water communication. Moreover, the mines in the Colony can never be properly developed so long as all the materials and machinery have to be transported on the heads of natives. Happily, one Government railway is already under construction, and surveys for six others have been made. Five of these lines will tap the mining districts.

In the nine months there were 621,116 tons of foreign refined beet sugar imported into the United Kingdom, and 311,237 tons of raw or unrefined beet, making together a total quantity of 932,353. The total quantity of sugar from all parts was 1,084,711 tons. Another proof is thus afforded of the almost entire possession by beet root sugar of the English market. The British public is providing work and wages for vast populations in Germany and France. Java and the Philippines show a great falling-off, and practically nothing comes from Cuba and Porto Rico. Peru and Brazil also show a large decrease, proving that all cane countries are suffering, so far as the English market is concerned, from the bounty competition. On the other hand, Mauritius and the East Indies have sent more than they did last year, but their actual totals are very small. The British West Indies have sent less, viz., 35,000 tons or rather more than ten per cent. of their total crop, probably in the from of Demerara and Trinidad crystals. During three months we only received 4,000 tons of West India sugar. The raw cocoa imported amounted to 38 million pounds, the home consumption for the nine months being 26 millions. The imports of prepared cocoa were 3,700,000lb, or not much more than half of last year's imports for the same months. The home consumption, too, has fallen off, being under four millions of pounds against more than four and a half millions in 1898. This looks as if the home manufacturers were using more of the raw cocoa, and we were becoming less dependent upon the Continent for our prepared cocoa supplies. The quantity of raw cocoa in bond is 19 millions of pounds, much about the same as last year, but the prepared cocca in bond is only 468,000lb, against 1,451,000 last year. This may partly account for the recent strong market, and be a reason for the continuance of favourable prices. The shipping of war stores to South Africa should also be regarded as supporting the cocoa market. It should, however, be noted that a large quantity of raw cocoa is re exported, viz.: nearly nine million pounds. The prepared cocoa exported is mall, only reaching 572,000 lb, which was, however, considerably, in excess of the two preceding years. The amount of new cocoa consumed per head of the population was 0·80 in 1898, showing a gradual increase since 1884, when it was 0·39. Prepared cocoa, too has increased in consumption from 0·03 in 1884 to 0.16 in 1898. The 0·20 of 1897 was evidently a record year, and due to special causes. On the whole, with an increased consumption, however slow and steady the prospects of cocoa are fairly good, and there may come a boom some day when the true virtues of this food will be more popularly recognised.—*Planter*.

A FAMOUS LADY ORCHID GROWER.

Mrs. George B. Wilson, of Philadelphia, according to the "Boston Traveller," (Sept). owns the largest collection of orchids in America, but she has unfortunately lost quite recently several fine specimens. The writer says that for the past ten years this gorgeous orchid flower has been Mr. Wilson's hobby. Always and admirer of orchids, about 1894 she decided to go into orchids thoroughly, and began a study of this millionaire's emblem, sending all over the world for specimens of it myriad varieties. Europe, Asia, North and South America, and the isles of the sea were explored, each for its particular production. At important orchid centres agencies for Mrs. Wilson were established which from time to time have furnished her with rare and valuable plants together with information regarding their cultivation. In this way more than 10,000 orchids have been brought together at the Wilson mansion in Philadelphia. In its line this asemblage is one of the most famous and most extensive in existence. A few years ago the collection as it, then stood, was greatly improved by the addition of that belonging to the Erastus Corning estate of Albany, which it had taken 40 years together. All of the great florist firms have professional orchid collectors. They brave the fastnesses of the forest of the Amazon and Orinoco rivers and are exposed to the deadly fevers and maismas of swamps where the anacondas and boa-constrictors are the least of the evils to be encountered.

Mrs. Wilson's collection is assembled in seven great glasshouses that were erected in the rear of the Wilson mansion at the cost of thousands of dollars. Upon entering the main conservatory, in the centre of which is a grove of the palms, the East India house is found to the left. Passing from this house the next is that of crypripediums, containing over 300 specimens. Beyond is the Mexican house, which is literally a mass of bloom. Many of the plants carry from two to six spikes of brilliantly coloured blossoms. Conspicuous among them is the rare Laelia dawsoni, bearing several flowers of a most exquisite type. Another prominent one is the Laelia anceps alba, measuring over four feet square. The Cattleya house has a fine showing of blossoms, and provides a distinctive charm in its superb specimens. Taken in its entirety, the collection fills seven houses, and it is conceeded to be one of the most valuable in America. Many of the smaller plants cost from 300 to 500 dollars each, and others of the unique varieties would fetch thousands even at forced sale. Perhaps the most interesting feature of Mrs. Wilson's collection is the assemblage of varities that come from the Phillippine Islands. The Spaniards made the collectors pay a licence for hunting orchids there, but despite that method of coaxing ducats from American pocket many unique plants came from the group. Under the new regime, when Aguinaldo and his followers shall have ceased to struggle, the Influx of plants from Uncle Sam's new domain will without doubt be greatly increased. Mrs. Wilson is now in Mexico, directly overseeing the work of her agents there who are searching for Mexican orchid wonders. Her superintendence is not a sinecure, nor is it the work of an amateur. The owner of this giant orchid collection is fully conversant with the habits of pet plant and of the laws which govern them. She has made a scholarly study of the flower, and believes in putting the knowledge she has acquired into practical application. When at home, everything is under her own personal supervision.

RHEA:
HISTORICALLY AND PRACTICALLY CONSIDERED.

I think it highly probable that there is no plant in the vegetable kingdom to-day around which centres such a wealth of failure, historical and abiding interest as that commonly termed rhea. Probaply many are not aware of its hoary-headed antiquity as disclosed by Chinese classics.

It should, however, be understood at the outset, there is probably no more difference between so-called China grass and rhea than there is between the China form of the tea-plant and that of Assam.

The so-called China grass is of itself a singularly unfortunate and misleading term, as the *Chu Ma* of the Chinese, or *Boehmeria nivea* of the botanist, has no more to do with a grass plant than has the apple with the pear for example. Those acquainted with origiual tea literature will remember how even so distinguished a botanist as Sir William Hooker pronounced in favour of a *rhea viridis*, that it to say a plant exclusively used for green tea as distinct from black.

And to-day we have a past president of the Society of Engineers setting out the misleading distinction of terming *Boehmeria nivea* a species of nettle indigenous to China and India, and *Boehmeria tenacissima* as a valuable textile plant. As though both were not texile plants, both *Bhehmeria's* both very closely allied so much so in fact as to probably constitute no other difference than the temperate and tropical form of one and the same thing.

The distinction, however, between the tropical and temperate form, otherwise China grass so-called, and ramie or rhea, is a material one practically, and demands the careful consideration of the planter. Dr. Watt has endeavoured to show that the hot plains of India are no place for the temperate China type. And this may be, and probably is quite true, although it by no means always follows. For instance, a mountain home was supposed to be necessary for tea originally obtained from the China mountain districts, but subsequent history has abundantly proved the tea-plant will thrive in all elevations from 7,000 feet down to sea level. *Phœnix dactylifera* otherwise the date palm is another case in point of a plant that will thrive abundantly in tropical and subtropical regions, even up to some frost and snow. Very few plants, however, will do this, for instance, the Assam so-called hybrid tea-plant is a sorry thing at high elevations, and there is not wanting evidence that *Boehmeria nivea* demands its own climate. From a persual of the literature of the subject and the undoubted fact that in years gone by direct imports have been made from China and elsewhere, there can bo little doubt the China and tropical forms of rhea have got confused until many mix up the two indiscriminately, and this will be a source of disappointment and failure to experimenters if not understood, and a clear distiuction drawn between the tropical and temperate form or type.

It is a fair inference in nine cases out of ten that a plant that has grown for untold centuries in temperate China with its comparative dry climate will be certain to fail in many places in India and conversely the tropical form under oppsite conditions; the practical man and planter should therefore ascertain for certain which form he is dealing with—the China type or the tropical type termed *Bohemeria tenacissma*. In 1848 a reference was made to Dr. MacGowan, then resident at Ningpo, as to the identity of the Rungpore plant with the China kind, whereupon Dr. MacGowan provisionally named the China plant *Canabis sinensis*. This however was entirely wrong, and shows how easily a learned man like Dr. MacGowan may go astray in putting down *Boehmeria nivea* as a *Cannabis*. We are less concerned, however with the doctor's mistake than his exceedingly interesting and comprehensive note on the plant in general.

In this note the doctor goes on to say the "*Chu Ma* is found from Cochin China to the yellow River, and from Chusan to the farthest west that researches can at present go, it is cultivated in many places, visited by the author, and grows even on the walls of Ningpo; it is mentioned in the Chinese classics and was undoubtedly cultivated a thousand years before our era; it is mentioned in the Shu King as an article of tribute from the central part of China in the time of Yu, B. C. 2205."

Here then we come face to face with a plant with a mighty record in time, but as if 2205 B. C. were nothing, Dr. MacGowan goes on to say: "—Doubtless it came into use in far more remote times,"—the *Chinese Herbal* says its origin is unknown.

Henco it will be seen in rhea we have a plant with one of the oldest records extent.

Leaving classical China on the subject, we come to India and Roxburgh—that Farther of Indian Botany as Dr. Watt very fittingly terms the learned and withal very practical Roxburg. In 1809 we find Roxburgh writing to the Secretary to the Board of Trade:—"From the receipt of the first sample sent to me by Mr. Ewer of Beucoolen, I saw its quality was uncommonly interesting, and promised to be superior to every other vegetable fibre I had seen. I was therefore, more than usually solicitous to obtain the plant, and in 1803 four plants were received into this garden, since which period a thousand plants have been raised."

Then the doctor adds this significant remark:—"But to this day I have not discovered a ready way to clean the fibres." Here in a nutshell, after 96 years, is still the central difficulty—an expeditious, cheap, effective and satisfactory cleaning machine. We imagine the century cannot produce the eqnal of so long and deplorable a failure of mechanical genius than is illustrated in the failure of at least thirty years of intermittent effort to produce a satisfactory decorticating and cleaning machine for rhea.

Roxburgh strongly recomended cultivation to the fullest extent, but remarked that this would be limited for a long time, as no good seed has yet been produced in India.

In 1833 Major Jenkins sent samples of the fibre from Cachar to Calcutta and subsequently from Assam.

Colonel Burney sent samples from the Shan Provinces of Pevela and Youkzouk, while Resident at Ava. Major Macfarquhar sent samples from Tavoy on the Tenasserim Coast. In 1836 Colonel Burney remarked it was cultivated by the Shans, the Siamese, and Chinese all of whom were loud in its praise for its fine texture and durability both as cloth and cordage. Mr. Landers, travelling amongst the Shans, also observed the same thing.

In 1847 we find Dr. Campbell, superintendent of Darjeeling, lighting on the plant at Rungpore in Bengal. "Here" says Dr. Campbell "it was cultivated with much care along the banks of the Teeshta River under the name of *kunkhura*." He goes on to say, "I never saw the plant before and as winter crops are rare in that part of the country, it was an object of additional interest."

Subsequently samples were sent to Calcutta, and a Mr. Henley visited Rungpore and endeavoured to purchase a quantity, but could only get a small bale, for sending home for sample, and Dr. Campbell says "The natives would not sell, and cultivated it for the manufacture of towing lines and fishing nets: on account of its proved superiority for fishing nets and for enduring water without injury longer than any known substance.

Mr. Henley expressed the opinion that machinery could be produced for the separation and cleaning of the fibre with great facility and economy; until then it was hopeless to expect the fibre to be produced at a low price. It is a curious commentary, after practically half a century, that the same opinion holds good to-day. Here briefly stated is the first half-century of rhea under European observation.

There was a unanimous verdict of its great strength durability, and find texture and sutability to withstand water longer without injury than any other known substance during this period. Samples were

sent to England, and its merits instantly recognised by British manufacturers.

And so the subject weut on gathering interest and enquiry until the Government of India—recognising the great obstacle to expeditious cleaning in their notification of January 1870—offered a prize of 5,000 for the production of a machine that should clean the fibre at a cost of £15 per ton, including all process of cleaning, wear and tear of machinery, and provided the cleaned prepared fibre fetched £50 per ton in the London market. Notwithstanding this liberal prize, which was again renewed in 1877 in the shape of R50,000, both trials were a failure, and no machine came up to Government conditions.

Since then two or three score of patent have been taken, and more than a dozen distinct processes invented, all claiming to have solved difficulty. Among the most recent, is the Ferguson process—the Macdonald-Boile—the Eyssen—and, lastly, Mr. Dear has turnee up with yet another machine of Automatic pretensions. According to the *Financial News.* Mr. Ferguson has spent £30,C0) on his process, and now merely wants £500,000 to place it on a commercial footing: it is possible Mr. Ferguson will be found wanting that some of money for some time to come yet.

Some time ago Mr. J.R. Boyle wrote from the Imperial Institute saying one firm would purchase to one thousand tons at £12 per ton in London with the fibre in its own integument. Mr. Boyle may rest assured that "one firm" is by no means alone in desiring 1,000 tons of rhea fibro at £12 a ton in London; seeing the eminently handsome difference between £12 and the price of the finished article and taking full note of the fact that at least half the cleaning has to be done in India.

Notwithstanding the many failures, it may be confidently predicted the time is not far distant when all difficulties of manufacture will be a than of the past. The subject is now become one of very keen interest to a greatly increasing number in widely divided places, and without a doubt it is understood a splendid fortune awaits the first inventor of a really effective and reasonably priced process for dealing with rhea. A fibre acknowledged on all hands to be one of the finest if not in the language of Roxburgh, the finest of vegetable fibres, must come to the front, and assert, its merits and if this should be so—and there is not the shadow of a doubt about it—India should not be behind in the matter. When all difficulties of manufacture have passed away, it will be solely a question of quantity, production, in short a planter's question.

PRACTICAL CULTURE OF RHEA.

At the every outset I must revert to the types and emphasise the paramount importance of clearly understanding which is which. Manifold errors and failures will be avoided in India by understanding clearly there are two types, which for cultural purposes are widely distinct in their climatic demands.

I note rhea seed figures in the admirable catalogue of the Himalayan seed stores: it is Italian-grown, and the "true rhea" so stated. But I must take leave to point out this Italian-grown seed is undoubtedly the produce of *Boehmerianivea*, which is the true temperate China plant, from which so-called China grass is made, and for cultural purposes wholly distinct from Roxburgh's type, named *Boehmeria tenacinsima* and which is the Sumatra plant, and no doubt identical with the tropical form subsequently found at Rungpore in Bengal and Assam; and doubtless the rhea being extensively grown in the Island of Ceylon, is the tropical type, and therefore not *Boehmeria nivea*, but Roxburgh's *Boehmeria tenacissima*, which is the vigorous, rapid growing, very long fibre type, in short the tropical type as distinguished from the temperate or at all events sub-tropical type.

When this point is understood an enormous amount of confusion and prospective failure will disappear. To, plant this the truo China type in such places as Assam for instance, is the best way to fail; in point of fact it is on record that a number of Assam planters have tried rhea culture and failed; at all events abandoned the culture. I have not seen it stated which type was used or exactly why the culture was abandoned, but if *Boehmeria nivea* was used, then we need seek no further for the why of the failure.

This is a case in which there is not much in a name but a very great deal in clearly distinguishing between the tropical and temperate type of practically the same thing, whether it be *Boehmeria nivea* or *Boehemeria tenacissima*; they are both first class, identical, fibre-yielding plants, but amenable to totally differing climatic conditions.

There is very little doubt that *Boehmeria nivea* would flourish well in sub-montane tracts along the foot of the Himalayas and up to 3,000 feet elevation in these places there is no possiblity of swamping, drainage is good, and it would be an inexpensive matter to lay on irrigation if desirable from some of the many water ravines desending from higher elevations. There is this additional advantage, *Boehmeria nivea* is an abundant seeder, and could be so produced in any quantity for those trying *Boehmeria nivea.* Dr. MacGowan, on the Chines- method, dating from time immemorial, may be briefly stated with advantage. Dr. MacGown says: "The seed is sown in May." [This would be a bad month in India; I would suggest the beginning of the mousoon or March as better for this country.] "Loose dry soil is to be selected, the ground to be well ploughed, manured, and broken up finely. Then divided into beds, eight yards by one yard wide; then raked levelled and watered down and left for the night. On the morrow the beds are to be loosened up, raked and firmed down again; then two or three tea-spoonfuls of seed is mixed in a bowl of earth and sown broadcast over the beds and raked in subsequently a frame work is made, and as soon as the seed commences to germinate, and come through the soil, the young plants are protected from the hot sun—of June and July—by mats. The matting must be kept moist by day and taken off at night for the young plants to receive the dew of heaven." [A consideration of the Indian climate in the submontane districts during May, and up to the burst of the monsoon suggests a different time for sowing to that of China namely, just before the burst of the monsoon when the soil is hot and the ensuing rains create a rapid germinating medium otherwise February should be selected.] "The beds must be constantly weeded. When plants are three inches high they should be taken up and transplanted four inches apart. In the following May they are to be taken up and planted half a yard apart." [This will never do for India, the transplanting in May; it would be better to do this in March, and possibly February would be still better.] Then follows instructions to water every few days for the first decade and at ten days intervals; subsequently in the second year, the plants will be mature for cutting. Regarding manures the doctor says:—"Never use swine's dung as it is 'saltish' and hurtful to the *Ma.'*

Further:—"In many cases fresh earth, pulverised bricks, ashes, etc., are used as manures." He also mentions a heavy mulch to protect the young plants from the cold of winter—this however would be of less moment in India than China.

Ten years is given as the age of unprofitableness, but even at that age it is remarked the plants may be taken up and planted forty inches apart in will prepared and heavily manured land.

Elsewhere Dr. Macgowan remarks the plant "is found at the base of hills and dry places."

The first cutting takes place in June and the last and of September or October. The stems grow seven or eight feet high and give three crops a year. "It not unfrequently happens that the crop is in some places remarkably small, and some other times the produce is very great without assignable cause." This remark should be duly noted; we can scarcely suppose in the case of China it would be climate, but more probably some peculiarity of soil; however this may be, it is to be noted the rhea plant is amen-

able in an eminent degree to suitability of soil and climatic conditions.

From the last cutting the finest cloth is made; after each cutting, it is mentioned, the plants are watered and manured: obviously this is a detail of considerable importance in the production of subsequent crop, probably the wartering would not in consequence of the monsoon season be needfull in India, but the manuring could not fail to be of considerable service.

From this it will be seen the Chinese pay great attention to cultivation, preparing the ground well manning it, and manuring at every cutting or three times a year; great pains are taken with the seedlings too; all this tends to show in an numistakable manner that rhea for commercial purpose must have a thorough culture, and disposes of the stupid somewhat prevalent notion that rhea will grow anywhere and anyhow; the fact moreover that the plant is cut down three times a year inducing a three-fold demand on the soil in the one year will ever constitute the rhea plant a rapid soil exhauster, and the Chineso have recognised that fact very well by manuring at ever cutting. This is an important fact to remenber. Commercial rhea will always mean a thorough and systematic culture, and this fact should be forced home with the manufactures from the planters' standpoint and low prices stoutly resisted.

Mr. Henley, who made a special visit to Runpore in 1847 in order to obtain a quantity of the fibre from the Rungpore fishermen states:—"It however requires a rich free soil and plenty of manure." No doubt the Rungpore plant was identical with Roxburgh's *Boehmeria tenacissima*, and it is so called by Mr. Henley, and in the matter of soil and manure it would reasonably appear to differ nothing from the sub-tropical China type. But in all other respects, as regards requisit climatic conditions, we must again accentuate the great difference between the two forms. I may venture to sum up what we believe will be found satisfactory conditions for *Boehmeria nivea*—the China type only:—

Planting localities.—All suitable spots as regards soil from the base of the Himalayas up to three thousand feet elevation; or any other parts in India giving from 1,000 to 3,000 feet elevation.

Soils.—There is an absolutely unanimous consensus of opinion that rhea requires a free, easily worked, friable soil, and this is quite comprehensible when we have in mind the fact that the rhea plant is a herbaceous perennial plant of rapid growth, and therefore requires a soil in which the roots can move about freely and rapidly. Within the areas noted there are numerous places giving a considerable depth of rich porous vegetable soil admirably suited for this class of plant.

Drainage.—This should be beyond all possible doubt good. Lands liable to be submerged or swamped, or even to lay wet for any length of time, should be studiously avoided. There is ample evidence in the shape of the wild forms taking no exception to great rainfalls where the drainage is perfect; rhea land should be such as to allow of heavy monsoon rains draining rapidly away. Here again the Himalayan slopes offers a drainage not by any means always available on the plains.

Given approximately these conditions, I am confident *Boehmeria nivea* would for the most part thrive abundantly.

In support of this view I may briefly note *Boehmeria frutescens*. Of this kind Dr. Campbell wrote in 1847—"It grows wild and abundantly in the valleys through the mountains of Eastern Nepal and Sikhim, at the foot of the hills skirting the Terai; to the elevation of 1,000 or 1,200 feet, and within the mountains up to 3,000 feet elevation." This is the *Pooah* of Darjeeling and Sikihim, and the *Poee* of Kumaon and Gurhwal, and *Boehmeria frutescens* of botanists indigenous to the sub-montane Himalayas from Gurhwall to Sikhim Hills. And also of Japan; but I may remark I have seen this plant in many places in Kumaon growing luxuriantly at between four and something over five thousand feet elevation. Dr. Campbell states that it grows to seven or eight feet high with stems the size of a pencil to that of the thumb, but he could no where find it on the plains and the hill-men considered it a hill plant.

Samples of the fibre of this kind were sent to the Flax and Hemp Committee, and pronounced by Captain Thomson equal to the finest flax and the best thing he had seen in India for sail cloths. I regard this as the wild form of the sub-tropical type, and no doubt the bon-rhea that grew wild all over Assam is approximately the wild form of the tropical type.

Dr. MacGowan also says of the China plant:—"Foot of hills and dry places: the fatal error is and has been the distribution of this type over the scorching plains of India. Those who intend rhea on the plains should undoubtedly confine their attention solely to the acclimatised tropical form such as the Rungpore. Assam and Malay plant."

Provided the soil is rich and drainage perfect, this is the type of rampant rapid growth, great size and length, such for example that grows so well in certain parts of Ceylon with its mean annual temperature of 78 degrees.

CONCLUSION.

Here then is the *Chu Ma* of the Chinese, the rhea of the Assamese, the *ran* of the Shans, *kunkhura* of Rungpore, Bengal, ramie of the Straits Settlement, *calooe* of Sumatra. For all practical purposes this is one and the same thing under greatly differing climatic conditions. It has been shown that the China plant is of enormous antiquity, probably quite five thousand years: in all probability the Bengal and Assam type has been indigenous for many centuries, and likewise the Sumatra stock. As for the wild forms it would be rash to speculate on their age.

During these lengthened periods each stock has become acclimatised to its respective environments, so that to-day they are amenable to advantage to a sub-tropical and tropical clime only; and the great mistake is to make these terms convertible, and mix the climatically wholly different forms together, and assume either one or the other is interchangeable for any parts of India. A misapprehension of this essential point cannot fail to be a source of failure in rhea culture. HIMALAYENSIS.

—*Pioneer* Nov. 8.

VANILLA.

BOTANICAL OBSERVATIONS.

Vanilla is the generic name of epiphytical orchids indigenous to tropical America and Asia.

During their first stage of development they strike root and obtain nourishment from the ground, then they creep up trees to a height of 30 or 40 feet by sending out thread-like roots from knotty stems. The stem is from 2 to 3 centimeters thick; the leaves grow in to long rows and are long, green and fleshy. Clusters of blossoms grow out at the angle between stem and leaf they are large and fleshy, and of a whitish yellow colour and pleasant odour. Following the blossoms come cylindrical pods, 8 or 10 inches long, which split on one side and are filled with a number of small black seeds. The latter suggest sand, they are imbedded in similarly coloured pulp. The fruit is yellow when ripe. On drying, it turns black, and forms the well known spice. The number of members of this family is not yet established; indeed some difference of opinion exists whether theso are species or only varieties. It has not yet been exactly determined which kinds of fruit are utilized either in the trade or at the place of production. In Mexico 4 useful kinds are known:—*Vanilla, V. sylvestris, V planifolia and V. pompona.*

In Guiana:—Vanilla guianensis, with large yellow blossoms and long fruit. In the province of Bahia:—*Vanilla palmarum.* In Brazil and peru:—*Vanilla pompona* and *aromatica*; the latter notwithstanding its name, having the least pleasant odour.

The search for useful varieties is still progressing. The director of the Botanical Gardens in British Gniana is just making the experiment of planting all the varicties indigenous to the whole of Guiana on his trellises (? misprint for Gelangestretch of land) in order to determine which can be recomended for planting and generally how to graduate their values.

If there are still mauy questious to be solved abont the Vanilla family, we do at least know definitely that the earlier theory, that most of the Vanilla of Commerce comes from the *V. aromatica* is a mistake. *V. planifolia* should take its place.

This kind furnishes the most valuable fruit, and is therefore brought into cultivatiou wherever Europeans are concerned in the Vanilla culture. What part the other kinds play in the production of the article of commerce it is impossible to say, even approximately.*

The *V. pompona* seems to be rather important, for their short, thick pods, easily recognised, are always on the market (though in small parcels), indeed they have received the distinctive name, Vanillon.

Its value is considerably less than that of *V. planifolia* fruit, frequently only one quarter.

Apart from the useful varieties, the Vanilla family has only a purcly botanical interest, for the blossoms do not possess the wonderful colour which distinguishes most orchids aud ensures their high rank in horticulture.

GENERAL SURVEY OF THE PRODUCTION.

Vanilla was introduoed into Europe in the 16th Century from Mexico, which was the chief place of production at that time, as it is at the present day.

The total crop of this state was given as 108,500 half kiols, in the last published Statistics for 1880. One cannot take this as literally true, for the official machinery does not allow of an exact estimate being taken. The output of Vanilla is still very considerable and is not exceeded by that of any other country. The chief seat of the industry is in the State Vera Cruz, the next iu Oajaca. The village Zentilla in the latter State is said to produce the finest Mexican Vanilla.

The Vanilla culture is also mroe or less developed in the States of Tabasco, Yucatan, Chiapas, on the Isthmus of Tehuantepec and in a few places on the West Coast as well as in the hinter land of Acapilco and Mazatlan.

As a rule. 5 kiuds of Mexican Vanilla are recognised:—

(1) Vanilla *fina* or *primira*, the pods are at least 24 c. m long.

(2.) *Chica prima* is shorter and thinner.

(3.) *Zacate*

(4.) *Rezacate* and finally

(5.) *Basura*, mark degrees in size.

The last named is not only the smallest, but is spotted, and often damaged. These varieties differ not only in size, but often in the contents of the pods.

In Guatemala, the Vanilla is not cultivated for purposes of commerce; the Indiaus, however, collect the wild fruit in the forests of the North West Coast, and bring them on the market at the Capital *(and as far South as Panama, J. H. H.)*

A few hundred pounds are exported from thence in some years, iu others no pods are exported. In the rest of Central America nothing is known of the culture of Vanilla, or of collecting the wild fruit. *(This is incorrect as I have seen it otherwise in Veragua, J. H. H.)* It is little better in the West Indies, where deficient experiments in planting have been made, but soon abandoned. Here and there a few hundred shrubs are cultivated, the out-put is used for home consumption. Guadeloupe alone exports small quantities to France, the annual amount varying extraordinarily. The exports amount in one year to 150 kilos, in the next to 1,500 kilos. In the year 1880 it amounted to 2,656 kiolos.

Although wild Vanilla grows luxuriantly and abundantly in the forests of Venezuela and Guiana, its culture is completely neglected. Attempts have recently been made in British Guiana to revive it. The Braziliau Vanilla does not enjoy a good reputation; this is a consequence of the nelegect it preparing the crop. A considerable part of the fruit is collected from wild shrubs, and is consequently of little value. What I have previously said about this country's Cocoa applies accurately to its Vanilla. The Vanillon, alluded to above, comes for the most part from Brazil. It is almost all used in France. During the "fifties," a series of bad harvests seriously damaged the sugar industry in Reunion, and caused the planters to turn to Coffee and Vanilla cultivation, with such results that this island has become, after Mexico, tho chief source of this spiece.

Not only that, the methods of cultivation have been brought to the highest degree of protection in Reunion and we must turn there to learn how the industry has advanced. The exemplary French statistics afford us also a dependable insight into the advanco and present position of Vanilla culture—an example which awaits imitators in this special branch.

The Statistical Tables show that in 1866, 223 hectares were planted with Vauilla shrubs, furnishing a total crop of 15,494 kilos. In 1871, the area covered was 593 hectares, and the harvest 25,547 kilos. In 1874, area 1,563 hectares, and harvest 43,959 kilos. At the beginning of the "cighties," the average harvest amounted to 5,000, kilos, and the area of cultivation about 1,800 hectares. The latter cannot be sharply defined because it is increaingly the custom on this island to plant the shrubs iu suitable places scattered over the ground. This is cspecially the case with the small landed proprictors who are mainly attracted to this industry. That is readily comprehensible, for the cultivation of Vanilla is suited to the "small people" owing to the great value of the product, rendering the possible maiutenance of a family of modest wants on a bit of land too small to allow of Sugar or Coffee cultivation. A further advantage is, that is not requisite to employ machine power or labour beyond that of the family, if working on a small scale. The French have likewise introduced the cultivation to Tahite, but according to the latest intelligeuce, ouly 30 hectares were planted, of which 2,000 kilos, of fruit formed the average crop. The example of Reunion was soou imitated by the ueighbouring island of Mauritius, but with less energy, for both before and since, sugar has been regarded as the staple article of the island. Statistical estimaions of the export are available, not of the production. From 1865 to 1873, the export amounted on an average to 5,000 English pounds (equal to 4,500 half kilos), from that time the cxport increased to an average of 12,000 pounds per aunum. Mauritius possesses a few other orchid species, the leaves of which may replace Vanilla for the perfumer. *Angræcum fragrans*, which when crushed emits an odour which powerfully reminds one of Vanilla—some profess to recognise an admixture of the odour of Tonquin (?) beans. The leaves of Faham orchids should be mentioned, yielding an aromatic tea which is so much valued that this plant has been introduced into St. Helena and Madeira and the leaves into France. The leaves of *Orchids fusca* emit a similar aroma. About 1840, the cultivation of Vanilla was introduced into Java, but it has only engaged attention in recent times. Planting has been energetically taken in hand iu Ceylon. It is still a question, however, whether the enthusiasm will prove lasting, and whether this Island will form an importsnt source of Vanilla. Vanilla thrives well iu Madagascar, and is even cultivated on a small scale. The output is trifling, and, since the war with France, has completely ceased. The refreshing action of Vanilla is due to an alkaloid named Vanillin, so closely allied to benzoic acid that it was

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* Vanilla pompona produces a pod almost identical with that of the *Vanilla grandfolia*, a native of Trinidad and the mainland, and the species producing the kind known as West Indian Vanillons in the markets. (J. H. H.)

previously considered identical with it. Vanillin often crystallises out on the pods in the form of fine needle-shaped crystals—sometimes only years after picking. The crystals notoriously influence the value of the article; they are regarded as a measure of quality. This measure is occasionally misleading, as is demonstrated by the fact that the finest Mexican Vanilla contains only 1·70 per cent.; Vanillin. Mauritius Vanilla, 2·45 per cent.; Java Vanilla, 2·75 per cent. and yet the first is by far the most valued. The explanation lies in the volatile oil which gives the special aroma, the products of Java and Bourbon being accompanied by another oil of pleasant odour. The percentage of Vanillin varies from 1 to 2.75, with but few exceptions.

Vanilla is usually packed in air-tight tin boxes in which it will retain its aroma for years. The quality may be estimated from the following points of view:—The longer and darker the pod, and the greater the quantity of crystals formed, so much the better are the goods. They should feel oily, and should emit a fresh, strong and pleasant odour. The pods in a box should be equal in length, not broken or in any way damaged. It must be preserved in air-tight vessels, as the aroma rapidly volatilises. These conditions are not always compiled with in the retail trade; one result thereof is a regretably frequent adulteration of old odourless Vanilla with benzoic oil, which is said to restore the odour and oil of almonds to give the the suppleness. The most hardened deceivers go so far as to strew Vanilla with salt to imitate the Vanillin crystals.

A product of the plant, unknown in Europe, but prized in South America, is a juice which trickles from the fully ripe fruit, and is caught in vessels hung beneath.

MANURING OF TROPICAL PLANTS—RICE.

The two varieties of this plant—viz., water rice and upland rice—require different soils and different climates. The first variety is more generally cultivated, and requires a moist, clay, soil, that can stand the necessary watering. Lighter soils should at least have a loamy, impermeable subsoil. Upland rice, on the other hand, can be grown on a soil not quite so rich; it stands dryness much better, and thrives also in less warm climates.

The following quantities of plant-food ingredients are removed from one acre*:—

By an average crop of	Potash.	Phosphoric Acid.	Nitrogen
2,676 lb. grains .. } 2,676 ,, straw .. } 446 ,, chaff .. }	28·1 lb.	16·3 lb.	26·2 lb.
By a good crop of			
4,014 lb. grains .. } 4,460 ,, straw .. } 624 ,, chaff .. }	45·7 lb.	21·9 lb.	39·2 lb.

Very thorough investigations have been conducted by Prof. Kellner† and others in Japan, as the fertiliser requirements of water rice. In order to determine the exhaustion of nitrogen, phosporic acid, and potash in the soil, a fertiliser trial was inaugurated, in which each plot received the following quantities of fertilisers to the acre.—

Plot 1	No fertiliser.		
,, 2	89 lb. phosphoric acid	89 lb. po'ash	— lb. nit.
,, 3	— ,, ,,	,, 89 ,, ,,	89 ,, ,,
,, 4	89 ,, ,,	,, — ,, ,,	89 ,, ,,
,, 5	89 ,, ,,	,, 89 ,, ,,	89 ,, ,,

Nitrogen was applied in the form of sulphate of ammonia, phosphoric acid in the form of double superphosphate, and potash in the form of carbonate. The development of the plants corresponded to that of the previous years; the plants which had received a complete fertiliser grew best of all, showing a normal green colour; next came the plants to which no potash had been applied. The plants to which no nitrogen had been given were of a light-green colour. Phosphoric acid seems to have a very beneficial effect upon the growth of the plant, for the plants which had not received phosphoric acid differed but little form the unfertilised plants; they were of a dark green colour, but very small. The average yields from three check plots (the size of the plots is unfortunately not given) were as follows*:—

(Yields given in ounces.)

	Straw.	Full grns.	Empty grns.	Total.
No fertiliser ...	10·2	7·5	0·1	17·8
Without nitrogen	16·8	12·0	0 2	29·0
Without phosphoric acid ...	13·1	9·5	0·2	22·8
Without potash	22·2	14·6	0·4	37·2
Complete fertiliser	27·5	20·3	0·3	48·1

Investigations were also conducted, to determine the quantity of nitrogen available by the rice-plant when green manuring with a lagume (*Astragalus lotoides*, Lam.) is resorted to.† Astragalus was sown in the autumn, and fertilised with different quantities of lime. In the beginning of May, when the plant was in full bloom, it was cut, weighed, and then turned under. The yield of green material was as follows:—

Quantity of lime applied per acre	0lb.	89lb.	178lb.	356lb.
Yield of astragalus per acre	8,991lb.	16,573lb.	16,341lb.	13,451lb.

The conclusion can thus safely be drawn, that astragalus responds well to lime fertilisation, though 89 lb. per acre were sufficient for the soil in question. The leguminous plants analysed 12·23 per cent. dry matter and 0·369 per cent. nitrogen; the plants from the plots fertilised with lime contained 2,266 lb. dry matter and 69 lb. nitrogen per acre. In addition to the green manuring, 98 lb. of phosphoric acid in the form of phosphate of soda and 89 lb. of potash in the form of carbonate were applied. The yields from the separate plots were as follows:—

Fertilisers Applied per Acre.	Yields per Acre in lb. Straw.	Full Grains.	Empty. Grains.	Total. Yield.
Potash and phosphoric acid without nitrogen	0·478	3·681	0 029	0·849
Potash and phosphoric acid, green manuring without lime ...	0·556	5·141	0·037	0·973
Potash and phosphoric acid, green manuring with 89 lb. lime ...	0·747	5·653	0 047	1·315
Potash and phosphoric acid, green manuring with 178 lb. lime ...	0·736	5·497	0 049	1·291
Potash and phosphoric acid, green manuring with 356 lb. lime ...	0·767	5·764	0·041	1·348
Potash and phosphoric acid, complete fertiliser with 473 lb. sulphate of ammonia ...	0·870	5·692	0·068	1·446

Green manuring increased the yield considerably especially on the plots that had received lime. The complete mixture of artificial fertilisers produced just as good yields as the green manuring; as in green manuring the nitrogen in the atmosphere can be utilised, this method is naturally less expensive and hence more profitable.

A similar experiment with green manuring was conducted with another nitrogen-gatherer—viz., indigo (*Indigofera tinctoria*)—in the botanical garden at Büitenzorg, Java.‡

* Lierke, praktische Düngetafeln, Berlin, Parey.
† Imp. University of Agriculture Komaba, Tokio, Japan, Bull. II, &c.

* "Jahresbericht für Agriculturchemie," 1892, p. 250.
† "Jahresbericht für Agriculturchemie," 1891, p. 172.
‡ "Verslag omtrent den Staat von "Slands plantentuin" te Buitenzorg ofer het Jaar 1894, Batavia 1895, page 42.

The indigo was grown during the East-monsoon, and as much as possible ploughed under during the rainy season. For the sake of comparison, two fields were manured with 205 and 410 lb. of lime per acre respectively, while a fourth was left unfertilised. The yields were as follows:—

	From 1 Bouw=1·7 acre.	From 1 acre.
Green manuring...	58·4 picul	4,596 lb.
410 lb. lime ...	56·0 „	4,407 „
205 „ „ ...	52·8 „	4,156 „
No Fertiliser ...	48·0 „	3,778 „

Field experiments on a more extensive scale have been conducted in Italy, the results of which are given in the following table:—

Fertilising Experiment with Rice.

By Professor Tito Poggi* on the Vendramin Farm (Po Valley).

No. of Plot.	Fertilisers applied per Acre. Plaster.	Acid Phosphate.	Sulphate of Ammonia.	Nitrate of Soda.	Muriate of Potash.	Cost of Fertiliser.	Yields per Acre in the first year. Rice Grains.	Chaff and Straw.	Value of Increase of Yield.	Yields per Acre in the 2nd year. Rice Grains.	Chaff and Straw.	Value of Increase of Yield.	Profit or Loss from yields of both years after deducting cost of fertilisers.
	lb.	lb.	lb.	lb.	lb.	M.	lb.	lb.	M.	lb.	lb.	M.	M.
1	...	...	...	...	...	...	1046·3	1608·5	...	1338·0	945·5	...	...
2	...	...	178	...	...	23·96	954·4	1824·1	...	1641·3	999·0	22.02	— 8·61
3	...	356	...	...	...	18·13	1632·4	1792·9	42·54	1677·0	1186·4	24·61	+49·02
4	356	356	...	...	89	28·49	1427·2	1766·2	27·65	1685·9	1213·1	25·25	+24·41
5	356	...	178	...	...	34·32	1159·6	1205.1	8·22	1471·8	892·0	9·71	—16·39
6	356	356	178	...	89	44·68	1659.1	1953·5	44·48	1632·4	1141·8	21·37	+21·17
7	...	356	178	...	89	49·86	1748·3	2354·9	50·96	1694·8	1141·8	25·90	+27·00
8	356	356	178	...	89	52·45	2123·0	2198·8	78·16	1726·0	1645·7	28·17	+53·88
9	356	356	...	245	89	53·42	1547·6	2114·0	36·39	1605·6	1110·5	19·43	+ 2·40

* Jahrbücher der "Cattedra ambulante" von Professor Tito Poggi, Rovigo.

The highest yield was obtained where all three of the plant-food ingredients had been applied, and on these plots a very good after effect was produced in the second year. Phosphoric acid proved very beneficial, especially upon the yield of grain.

Professor Poggi, Rovigo, makes the following recommendations for the quantities of fertilising materials to be applied per acre:—

	For New Fields.	For Exhausted Fields.
Sulphate of ammonia ..	89·0 lb.	178 lb.
Acid phosphate (16 per cent.)	222·5 „	356 „
Muriate of potash ..	44·5 „	89 „

267 to 356 lb. plaster or slaked lime should be applied to soils deficient in lime. In case of light soils the quantity of murate of potash applied per annum should not be less than 89 lb.

However, too much potash should not be applied to water rice, as this ingredient produces a luxurious formation of straw at the expense of the yield of grain. American rice-planters always recommend large quantities of potash for upland rice, holding that this is necessary to obtain a heavy yield of grain.

Mr. C. K. McQuarrie, of De Funiak Springs, Florida, holds that the presence of empty husks of upland rice is due to a deficiency of potash. He makes the following suggestions in regard to the planting of upland rice on the rather light soils of Florida:—

If a crop is going to be made on new land, it should be well ploughed during the previous winter, and harrowed over and over again, until all the sod is broken up. At the last harrowing 400 lb. of kainit per acre should be scattered broadcast. When ready to begin planting, furrows should be run with a bull-tongue plough, about 3 feet apart. In these furrows scatter about 300 lb. fertiliser per acre, containing phosphoric acid and potash, not less than 8 per cent. of each. This fertiliser must be well mixed with the soil by dragging a chain in the furrow. The seed must be sown liberally, as at least 25 per cent. of the rice generally grown is nothing but empty husks. After the plants are up, treat the crop to a little top-dressing of nitrate of soda. If the crop is planted in March or beginning of April, we can always depend on getting a second crop from the stubble of the first crop. This second crop is generally not so good as the first, but if fertilised when the first crop is cut it will repay us for our trouble.

Rice must not follow itself on the same land, as it greatly impoverishes the soil, but if we want to continue it on the same land green manuring and a liberal application of potash are absolutely essential. The leguminous plant should be sown early in the spring, and can be ploughed under in time for the first planting.—*Queensland Agricultural Journal.*

WOOD-PULP.

The utilization of the waste products of our Indian forest is a most important problem, but in many cases even where the uses such material can be put to are known, there are serious difficulties to be overcome. In the case of wood-pulp, however, it is indeed to be wondered at that no enterprising capitalists come forward to develop the industry in this country.

In Europe the manufacture of wood-pulp has been going on steadily for many years, but so great is the demand for timber there, the manufactures are able to obtain only a comparatively small supply of the raw material required. The consequence is that although new uses of wood-pulp are discovered every day, the industry has not expanded very considerably.

It is in America, both in the United States and Canada, that wood-pulp is creating a veritable revolution in the mercantile and manufacturing world. So much so is this the case that "*The Times*" says:—

"The extraordinary development of the single manufacture of 'wood-pulp' which only a few years ago was practically unknown and is now used not only for making paper but for clothing and an immense diversity of other articles, is a sufficient indication of the practically limitless extension of the already widely 'varied use of timber.'" "Cotton," it is said on the other side of the Atlantic "was once called king; but king Cotton is a lesser potentate than king Timber must soon become."

All the American papers are full of accounts of the wonderful development of the industry in that country, and of the constantly increasing uses to which wood-pulp is now put. It is in fact this industry that has brought home at last to the people of America the urgency of making State reserves, protecting them from fire and managing them systematically; for, as long as lumber only was exported

from the forests the younger and smaller trees were left, but now that the wood-pulp man has appeared no trees escape, as he utilizes all the trees left by the lumber man.

The New York Tribune, referring to the numberless uses of wood-pulp and the inroads caused on the United States' Forests say:

"Printing paper alone eats an enormous hole in our national forests yearly, and the future extent of that requirement can only be conjectured. The huge procession of railway cars all over the country run, to some extent, on paper wheels; carpenters are begining to use boards of paper handsomely veined requiring no planing, twice as durable as the wooden variety, and costing only half the money. The builder is introducing paper bricks, showily enameled, which will not burn, and possess many advantages over those of burnt clay. The ship-builder introduces masts and spars of the same substance, which is likewise used for telegraph and telephone poles and flagstaffs. These are not fanciful experiments but serious business procedures, justified by the superior durability of the articles so produced. The same quality is claimed for the paper horseshoe recently invented and now extensively used. An enumeration of the purposes for which this surprising protoplasm has come to be employed would stretch into a catalogue and new ones seem to be discovered every day."

Verily we are approaching the day referred to in the chorus of the old song.

'Paper hats, paper coats, paper boots and shoes.
Patent paper, sailing ships and patent paper crews.
On the paper market there'll be a paper strain,
And every one, both young and old, will have paper on the brain.'

The chief wood used for pulp is spruce but silver fir is used in the Vosges mountains. Poplars, which have a short fibre, are also used but more especially for mixing with spruce pulps to give the paper a more even surface. Of spruce there is an unlimited supply in the N.-W. Himalayas, from the Bhagirati to Afghanistan, also in Sikkim and Bhutun. It grows chiefly on Northern and Western slopes between 7,000 and 11,000 feet. The species is of course *Abies Smithiana*, very closely allied to the common European spruce, *A. excelsa*. It attains a maximum height of some 225 feet, and a girth up to 16 feet. The wood is white like that of *A. excelsa* and weighs about the same *viz*, 32 lb. per cubic ft. on the average.

In the Jaunsar Division alone there is a huge stock of magnificent trees, which is unsaleable at present as there is no demand for it. So much so is this the case that wherever it happens to be found growing near deodar, it is ruthlessly killed by girdling and allowed to rot, so as to favour the valuable deodar. I roughly estimate that from this Division, were the spruce put under systematic management, an annual outturn of 1,50,00,000 cubic feet, or about 5,70,000 maunds, equal to about 21,000 tons by weight, could be obtained. If a large quantity like this were exported it is probable that it would pay the Forest Department to sell the wood at Dagpathar on the Jumna for about eleven annas a maund.

Wood ground mechanically yields, I believe, one-third of its weight in pulp (dry) and this the paper mills would, it is supposed, willingly purchase for at least R3 per maund delivered on the railway, as their agents in the bazaars are now scouring the country for old pieces of paper of all kinds which have to be sorted, washed and bleached before being of any use. For this the agents give R2 per maund and they must get a good commission for all their trouble.

Fifty-seven thousand maunds of spruce would yield some 1,90,000 maunds per annum, or 633 maunds per diem (taking 300 working days=one year) of mechanically-ground pulp and this should sell for R5,70,000.

There is not likely to be any difficulty in disposing of this quantity as the demand for paper in this country is steadily on the increase, more or less in proportion to the spread of education and trade. Moreover, if good raw material were readily obtainable by the paper mills they would not be so keen on making arrangements, throughout India, to collect all the waste paper, however inferior its quality may be.

The probable annual receipts and expenditure for such an outturn would be as follows:—

Receipts.

	R.
By sale of 1,90,000 maunds of pulp, delivered at Dehra Dun Railway Station @ R3 per maund	5,70,000

Expenditure.

	R.
Purchase of 5,70,000 mds. of spruce @ 11 annas per maund	3,91,875
Wear and tear of machinery and buildings @ 10 % on R1,50,000	15,000
Manager's pay @ R800 per month ...	9,600
Mechanical Engineer's @ R450 per month...	5,400
3 Foremen @ R50 each per month ...	1,800
3 Do @ R30 each per month	1,080
60 Workmen @ R6 each per month ...	4,320
Carting 1,90,000 maunds of pulp to Railway at 3 Annas per maund per 26 miles ...	35,625
Miscellaneous charges	5,300
Pofit on capital of R5,00,000, *i.e.* 20 % per annum	1,00,000
R. ..	5,70,000

The Capital required would be as follows:—

Cost of Machinery ...	R. 80,000	R. 1,50,000
Setting up, leading water and erection of buildings	R. 70,000	
Working Capital		R. 3,50,000
Total ...		R. 5,00,000

This is the prospect which seems to await any capitalist enterprising enough to take up the business; and, if mechanically-ground pulp is able to give such a profit, what would the profit be on chemically-prepared wood fibre for paper and cloth? For, although it is somewhat more expensive to manufacture, the yield is as much as 60 to 66 per cent. of the weight of the wood against 33 per cent. of mechanically-ground pulp. Doubtless Government would be prepared to meet any capitalist willing to start the business, with an agreement to give him the first refusal *via* Dagpathar, at a certain rate for a certain numbers of years, as well as to lend him a plot of land for his factory with a right to lead water from the river to propel the machinery, so that he could make his own calculation as to whether it would pay him or not. Government at the same time would benefit by the opening out of a market for spruce, for which there is now no demand.

There should be no difficulty in getting water power sufficient to drive all the machinery required for the factory as, I belive, the fall of the Tons river at the foot of the hills is about 45 feet per mile. Should a market for spruce be in this way developed, it would most probably pay the Forest Department to grow spruce on a rotation of 30 or 40 years.

The Canadian pulp factories have bought up large areas of forest land which I am informed they are treating on a 20 year rotation, but then the growth of American spruces, especially the Douglas spruce, is very rapid; *vide* the table published in "*The Indian Forester*" for May 1899.

The trees in the plantation of spruce near Deoban in the Jaunsar Division made in 1874, when the plants were put out at one year old, now average 20 feet in height and 4·6 inches in diameter; but the plantation is not densely stocked and the locality is one with an Eastern aspect, while spruce does not apparently grow thereabouts naturally. So it

is expected that with a rotation of 30 or 40 years, in places suited to the species, it would give a suitable sized tree for pulp purposes. When once a regular young forest was formed, the age at which the mean annual increment per acre culminated would be determined, and that age fixed for future rotations. It is very possible that, if experiments were made at the factory, it would be found that silver fir could also be utilized, in which case it would be advantageous to grow a mixed forest of spruce and silver fir.

It is, indeed, to be hoped that a market will soon be developed for spruce, as it is too heart-rending a sight to see all the grand trees now growing being absolutely wasted; and, as mentioned before, being girdled and allowed to rot wherever they interfere with deodar, even though the latter be seedlings, a few years old.

P. H. CLUTTERBUCK.

Jaunsar, May 1899.

THE NILGIRIS.

[FROM OUR OWN CORRESPONDENT.]

Since the Madras Government abandoned the commercial aspect of its cinchona experiment and adopted the philanthropic, it has ceased to give the public any information regading the manner of working its cinchona plantations on the Nilgiris, which is to be regretted. But notwithstanding this circumstance occasional reports fall into the hands of members of the Press, and we learn what is being done. It is from such a stray copy for 1898-99 that I am in a position to give you the following account, wich I hope will interest your planting readers.

This is the second year of the experiment of Government purchasing bark from private planters for working up in its Nedduvottun quinine factory, and it is one of larger transactions. In 1897-98 only 108,934 pounds were bought for this purpose, but in the year under review no less than 405,074 pounds were purchased at R83,120-4-8. From the Government plantations 101,307 pounds of dry bark were taken, but from the combined sources only 461,941 pounds were used up in the factory to produce the 12,603 pounds of sulphate of quinine and the 7,238 pounds of febrifuge turned out by it, costing at the rate of R7-11-7 including, and R2-4-6 excluding, the value of the bark per pound of alkaloid; or taking quinine alone, it cost R9,9-6 to produce a pound, that in sale transactions is valued at R18. Though this is not the price at which quinine is issued to public institutions, charged at the rate of R15 per pound. The quantity of quinine issued by the Cinchona Department during the year to all buyers was only 4,629¾ pounds, or something more than a third of what was manufactured. A fact attributed to the falling off in the demand for quinine from Bombay and from the Punjab during the year, having been supplied by the Bengal plantations instead of by the Madras, as heretofore.

Mr. Standen says that the Nedduvuttun Factory as at present equipped, can work up to 450,000 pounds of bark per annum. The actual expenditure on the Department 1898-99 was R1,94,603-14-1 and the actual recipts for the same period amounted to only R91,039-2-8 the balance having been provided out of a special grant by the Government of India of R1,02,000 made for the purchase of private bark.

The year was also marked by the resumption, after a long period, I think of 20 years, of extension of cultivation on the Government plantations so much condemned by the planters as a breach of faith on the part of Government with them. The extension at Pykara, on the Hooker Estate, measures 80 acres and is completed, but there is a further extension being made in the same locality or another 80 acres which will be noticed in the report for 1899-1900. Referring to the raising of nursery plants for this purpose and for replanting failures, Mr. Standen notices a disaster that was dealt with successfully by his superintendent at Dadabett. It was found that a number of small thread worms girdled the roots of the seedlings and caused their death. The insects were found in the baskets in which they are established before planting out, and the damage done by them was revealed by the microscope. To destroy the worms the baskets, plant and all were immersed in a strong solution of salt and placed in beds covered with saw dust that had been sprinked with kerosine oil. The result was that no worms were to be found in the soil in the baskets afterwards, but lest the soil itself might be thus affected it was used, after being burned, for subsequent nursery purposes.

Dadabett is the Government cinchona plantation of the greatest age, and it is satisfactory to note here that the oldest trees are the healthiest, the most vigorous, and the most ready to respond to cultivation and manuring. Speaking of the wont of success in planting operations in previous years, Mr. Standen attributes it to soil exhaustion, for such operations are quite satisfactory when carried out on new land; and this led him to recommend that land with cinchona, on being cleared after uprootal, should be replanted with fuel trees.

Similar appearances were observed at Nedduvuttun, the oldest parts of that plantation being the best and here the replanted land growing the only sickly trees.

From the statistics attached to the report I gather that the entire number of trees on the Government plantations on the Nilgiris aggregate 1,675,103; that between stripping and coppicing since the commencement of this enterprise by Government as many as 3,402,634½ pounds of bark have been taken and either sold or worked up into quinine and febrifuge. That the plantations, as they stand, represent a surplus of receipts over expenditure of R13,80,403; that in 1875,76 expenditure exceeded receipts by R11,22,117, which has been overtake by the present surplus. This, I suppose, means that since 1875, the plantations have been working at a profit, the aggregate to date being R25,02,500, a highly satisfactory result, if it does not only exist on paper.

For the year under review, Mr. Standen says that a profit was realized of R35,377-3-3.

Mr. Standen early in the current year visited Java by order of Government, and concludes a lengthy, interesting and suggestive report with the following five practical suggestions, which will commend themselves to growers of cinchona who wish to be abreast of the times in the details of their industry. The suggestions are—*(1)* That further attempts should be made to cultivate ledgers from seed obtained from Java. They should be grown at an elevation of from four to five thousand feet, in rich, well drained soil, and the richest trees only should be propagated from. *(2)* The grafting of ledger on succirubras at low elevation and of officinalis on succirubras at higher elevations should be tried. (3) Officinalis seed should be taken only from trees showing a high percentage of quinine. (4) Succirubra bark should be shipped in the from of quills; and (5) high cultivation should be adopted and where the lay of land and nature of the soil are suitable the ground should be terraced before planting.—*Planter.*

UNITED STATES EXPERIMENTAL TEA GARDEN. The only tea plantation in the United states, at Summerville, S.C. The estate, known as Pinehurst, covers 700 acres, of which fifty are devoted to the cultivation of tea. The first "Rose Garden" was planted in 1890. In 1894, 151 pounds of tea leaves were harvested; in 1895, 333 pounds; in 1896, 600 pounds; in 1897, 648 pounds; in 1898, 1,200 pounds. On the basis of 900 plants, the production per bush is almost five ounces of tea. This tea has a distinctive character, and retails in the local market at $1 per pound. It compares favourably with tea bringing 25 cents at pound in lines in the New York Market—*Planting Opinion*, Nov. 11.

TEA AND OTHER PRODUCTS—SPECIALLY CACAO IN THE WEST INDIES.

London, Oct. 13.

My enquiries, I am bound to say, do not in their results, give much encouragement to the proposal to substitute "private contracts," to some extent, for public sales. The very large number of lots to be dealt with is offered as a strong objection by a broker with long experience in the China and Indian tea trade; but that might be obviated, to some extent, by larger breaks, as indicated in my last, if the big Companies and proprietors so arranged. A more forcible objection is the difficulty of getting at the chief buyers and of disgusting the smaller men who would in a manner be shut out from "private contract" business; while they participate in all that goes on in the public auction room. There is, however, another side; and I have been favoured with opinions worth quoting—thus one merchant writes:—

There is, I believe, a very general impression that huge profits are made by the London buyers. I don't think this is the case to an undue extent; but, on the other hand, I think that the public are getting too good value for their money in many cases. I enclose the advertisements of three of the big blenders in the *Grocer* of 2nd inst. all offering a blend at 9½d per lb. *duty paid* (4d) and carriage paid. There can be no profit on this, even if the commonest stuff of any sort that can be picked up be supplied. This is only a "method" of the trade to enable these people to get at the higher priced trade out of which they can make a profit. Besides these three, there were on 2nd Sept., about six or seven other firms with a 9½d blend. In this week's *Grocer* Brooke Bond's advertisement does not appear; but both Kearley and Tonge and Lipton's are still offering their 9½d mixture, although there is hardly a leaf of Indian or Ceylon tea to be had at less than 6½d as it lies in bond. The profits earned by these big concerns represent in most cases a return on years of energy expended in building up the business. The enclosed advertisement from a recent *Standard* throws some light on the ins and outs of tea distribution, and the cutting from *s* of a *Time* few weeks ago, *re* John Rees, shows that everyone does not succeed in the business! These points may be useful to you in dealing with the question of a Growers' Distributing Co., to manage which successfully a "genius" would have to be discovered. If a few of the big Companies—C. T. P. Eastern Produce, Anglo Ceylon, &c.—were to give the "private contract" system—with large breaks—a trial, I think they would not find it as difficult as would at first sight appear.

Again, it is quite realised that a change, even though partial to sale by private contracts," involves very big interests, and is a big question altogether, requiring careful consideration at the hands of the leading importers and agents, as well as by the planting and mercantile community of Ceylon. I may have some more opinions to give from this end later on.

Meantime as we are congratulating ourselves on the check to further extension of tea-planting, with the risk of over-production, I find the following advertisement in *The Times* of 12th Oct.:—

Ceylon Tea Land, 4,000 to 5,000 acres in one block, elevation 2,000 to 3,000 feet. Good water power and rainfall. Exceptional chance. Little land now available at this elevation.—A. F. S., Z.442, The Times Office, E.C.

The initials "A.F.S." would seem to point to a well-known retired planter, and I should guess that the block referred to must be situated in Yakdessa or the upper end of the Kelani Valley.

Turning from Ceylon, to the

WEST INDIES,

one may ask, can any good thing be found in that much-tried part of the world? Well it seems an enterprising Scot who knew little or nothing of the Tropics, until he happened to read "Tropical Lands" by A. Sinclair (copies to be had at your office), sought an interview with the author who advised him to go with his capital to the island of

TOBAGO

and there it seems he (Mr. W. Archibald) is in a fair way to make a fortune! Here is an extract from a letter which has been placed at my disposal:—

I did not return home till the end of June this year from the West Indies and I am glad to say all the time I have been away I have enjoyed very good health. I am very well satisfied with all my investments in Trinidad and Tobago. One of my cacao estates gave me a return of nearly 30 per cent. I bought another cacao estate in January in Upper Caroni for a little over £4,000 and I expect this will pay me even better than the other. We had a very severe drought after the crop and this property did not suffer nearly so much as the others. I have had my hands full in Tobago. I have built a pretty large house there, which will be finished by the end of next month. The house is exactly 400 feet above sea level, with splendid view of the hills at the back and sea in front. Water is laid on all over the house, and I am putting in acetylene gas; so when all is finished, it should be fairly comfortable, and I hope you will come out and pay me a visit, and see Tobago. As to planting, I have got about 50 acres in cacao, about 10 acres of coffee, [The coffee grown in Tobago (Arabian small bean) fetches the highest price in the New York market.] 5,000 nutmeg trees and before the end of the year will have over 5,000 rubber trees planted. The difficulty is getting steady labour to keep the young cultivation clean. I am getting over coolies from Trinidad and hope to get a larger area planted next year. Since I bought my estate in Tobago last year, things are booming, a number of estates have changed owners at higher values. A Mr. Thornton from Ceylon has bought an estate "Alma" for £1,600. This property, I believe, could have been bought last year for £800. He purposes, besides planting, of erecting a large bungalow for a sanatorium and run a coach from Scarborough to Alma. Messrs. Howard and Ord bought the adjoining estate to mine shortly after I bought mine last year. They are acting for an English Rubber Syndicate: they have already planted, I believe, about 50,000 rubber trees. Those trees planted under shade are doing well, but in the open growing very slowly. There are still many *good estates* to be had in Tobago. I have the offer of one now—500 acres—for about £700 called "Caledonia" with 1,000 cacao trees bearing and 5,000 non-bearing, 200 young nutmeg trees, and I understand the soil is very rich. So if you know of any one who wants a cheap estate, I will be glad to get and give all information. I am thankful to say we have escaped so far all the hurricanes. We are in a measure out of the latitude of them, although, I think, in 1845 they had a slight one in the northern side of Tobago.

I suppose Mr. Thornton is our old friend of the Kelani Valley and Dikoya, who has travelled a good deal in his day. It is certainly surprising, in the face of such an ex-

perience, that West Indian sugar planters should sit still and whine to Mr. Chamberlain; while inexperienced newcomers like Mr. Archibald should walk in and win—and most deservedly, in view of the enterprise displayed,

KNAVESMIRE ESTATES CO., LIMITED

REPORT ON THE KNAVESMIRE PLUMBAGO PROSPECTS.

Messrs. George Steuart & Co., Colombo.

Gentlemen,—Acting on your instructions I proceeded to Kegalla and thence to Knavesmire on the 25th April last to inspect the last named for plumbago. Mr. Daniel met me and shewed me every attention and kindness, and with him I went over the estate next day. The first point examined was a shaft sunk on a vein of plumbago some 60 feet vertically, above the stream marking the Northern or North-West boundary of the estate. Before proceeding further I may say that the shaft in question is altogether too large for the requirements of prospecting or even for fairly extensive working above water level, and this is an important matter when working mines in cultivated land.

This shaft is some 15 feet deep and I noticed with satisfaction that the vein had improved consideraby even in this short distance. In the present bottom of the shaft the vein is some 6′ to 8′ wide, not all mineral, but the larger portion is plumbago and of very good quality, and as depth is attained, there is little doubt the vein will improve, will become more compact and less impregnated with foreign matter, but even in its present condition it is a vein of plumbago not to be dispised, as it would pay for extracting even now, if properly worked either by shaft or tunnel. For the better development of this vein and others that will be mentioned later on, I should recommend a tunnel being put in at right angles to the strike of the veins, from some convenient point below the before-mentioned shaft; and while on the ground I pointed out to Mr. Daniel a site that I think would answer the purpose admirably. A tunnel at the point indicated would intercept the vein some *40* feet below the top of the shaft, and the distance to drive to the first vein would not exceed 75 feet, and this through most favorable ground for working. Beyond the vein sunk upon in the shaft traced three other distinct plumbago veins running parallel with the first named, and all showing more or less good indications and one in particular shews excellent prospects.

All these veins can be tapped by the tunnel I recommend and the distance would not exceed *150* feet further driving.

As each vein is intersected, drivages on their course would be put in hand to prove the vein in lengths, and to open up the ground for stoping, and to do this the main tunnel need not be stopped more than a day or two for the starting of each drivinage on the veins. Ventilating shafts will necessarily have to be sunk at various points as the main tunnel proceeds, but these need not be large nor would they be of an expansive character, and as they would all be sunk on the veins they would probably pay for the labour spent upon them, and possibly leave a profit. Such shafts as I have mentioned are also required for laying the veins open for convenience of removing the mineral; so there are two objects in sinking them. The veins here strike S.-E. and N.-W. and the dip S.-W. varying from 20 to 40 degrees about. To the North-West the strike of the veins soon take them out of the limits of the estate, but to the S.E. there is a clear 400 yards. I should judge that these veins can be worked upon within the Knavesmire boundary and before the limits of the estate are reached in that direction there will be quite 120 feet vertical of mineral veins above the tunnel, which with four veins to work upon, means a large area of mineral ground.

In conclusion I may say that I have a high opinion of the prospects of opening up a payable plumbago industry at Knavesmire, and I can with confidence recommend the further exploration of the property.—I am, Gentlemen, your obedient servant

(Signed) LEONARD TREGAY.

Morankande,
3rd May, 1899.

CHINA TEA.

EXPORT OF TEA FROM CHINA TO UNITED KINGDOM AND CONTINENT.

	1899-1900. lb.	1898-99. lb.
Hankow and Shanghai	9,544,030	10,608,322
Amoy ...	221,484	390,250
Foochow ..	11,193,226	10,577,774
Canton ...	4,042,645	3,770,406
	21,001,411	25,302,652

EXPORT OF TEA FROM CHINA TO UNITED STATES AND CANADA.

	1899-1900. lb.	1898 99. lb.
Shanghai ...	1,222,849	1,132,577
Amoy ...	8,339,928	7,253,022
Foochow ...	4.414,770	4,969,051
	13,977,546	13,354,650

EXPORT OF TEA FROM CHINA TO ODESSA.

	1899-1900. lb.	1898-99. lb.
Shanghai and Hankow	25,363,948	22,676,902

EXPORT OF TEA FROM JAPAN TO UNITED STATES AND CANADA.

	1899-1900. lb.	1898-99. lb.
Yokohama ...	20,558 065	19,156,167
Kobe ...	11,782,517	11,235,261
	32,337,582	30,391,428

—*Hongkong Weekly Press*, Oct. 21.

NORTH MYSORE PLANTERS' ASSOCIATION.

A REDUCTION OF WAGES.

At an extraordinary general meeting of the Association held at the Balehonur Club on Monday, the 23rd inst., the following members were present :—Messrs. O Scott Skirving, president, F Clifford, H Edington, C Danvers, E Lund, D MacMillan, H Morthey, C Wood, L Kingchurch, H G Bonner, N Seton, D Allardice and T J Parton, Hon. Secretary, proxies from Messrs. C Harvey, C H Browne, C P Reed and H Bidie. The proposal "That coolies pay be reduced to three annas and six pies to men, and two annas for women" was carried. An amendment to the following effect, proposed by Mr. H Edington and seconded by Mr. F Clifford, "That advances be abolished, that men be paid three annas and six pies, and women two annas and six pies, and that the commission to maistries should not exceed 10 per cent" was rejected. It

was further decided that as only 50 per cent of subscribing estates was represented at the meeting, all members of the Association should be supplied with voting papers on the proposition and the amendment, in order that they might have the opportunity of ratifying or rejecting the above proceedings.—*Madras Mail*, Oct. 28.

A SHADE IN CRAZE.

(Communicated.)

With reference to the remark of "Finem Respice" in the *Ceylon Observer* regarding shade for tea, it shonld be generally known that when tea was first planted in Cachar and Sylhet, shade was deemed requisite; this false impression prevailing down to the autumn of 1860 and among some planters even to ten years later. Even Dr. Jamieson of the N.-W. Botanical Gardens in his remarks on Fortune's report, shews an inclination to adhere to the fallacy. In 1860, a Kew man, who had had subsequent Indian experience at Sibpur uuder Dr. Anderson, put in an appearance in Cachar, and to the surprise of the few men then in the district, took up a block of grass land entirely destitute of timber. Previons to this, Silcoorie, the two Jaliugas, and one or two gardens in the Chutla upon which a large amount of timber had been left standing, exhibited an array of straggling bushes the result of constant drip. So marked was the success of putting plants out in the open at Doodputli that, in 1861-62, down came the timber in all directions, the improvement becoming apparent within a few weeks, in the filling out of the stems and branches, and greater development of vegetation. Shade in Assam has never been resorted to since; and as we happen to know something of the Wynaad and Southern India in general, we would strongly deprecate, in the interest of proprietors there, as also in Ceylon, its adoption for tea. At certain exposed spots in the Nilgiris we know that many planters have endeavoured to counteract the effects of the violent wind that sweeps across coffee plantations when the plants are blossoming by planting belts of *Acacia dealbata*, but the remedy, owing to the tendency of the roots if these plants to ramify in all directions, has proved worse than the evil is was hoped to mitigate. How high may he ask does "Finem Respice" intend to permit his *hevea* to run? Like all plants of the rubber yielding species the para requires and draws from the soil all the properties it possess is and will be found to flourish best upon land occasionally subject to submergence, as is demonstrated on the upper water of the Amazon, Orinoco and some of the streams in the different Guineas. The rubber is found under similar conditious on the Congo and Gambia, sufficiently proving it to be a most exacting plant; so that any variety put down between the rows of either tea or coffee can only be at the expense of the latter.

All true caoutchouc yielding plants are vines; we think that fact was established years ago by Sir W. Hooker, father of the present eminent botanist, when curator of Kew. Any plants put down between the rows will open np the soil, but as such plants as para develop, they will most assuredly uproot the weaker plant. As far as mere planting goes Assam has been demonstrated to be the land par excellence for tea, neither Ceylon or any part of Southern India being able to compete with in the full average of either quality or outturn, and though quite willing to admit that conditions of cultivation must necessarily differ under different aspect of climate, elevation, rainfall, etc., we unhesitatingly affirm that wherever tea is considered unable to get along without shade that locality is utterly unfit for the plant. This is the reasons it has failed in both Trinidad, Jamaica and other of the West India Island.

We do not belong to the "creeper" fraternity,* but our botanical experience dates from the winter of 1854, in addition to what we learnt by a pretty close attendance at Kew; whatever knowledge we possess has been acquired in hill and plain, in the West Indies, and in almost every district in India from Cape Comorin to Mussoorie aud Karachi to the Salween. "Finem Respice" adduces five reasons for planting para rubber between the rows, everyone of which emphasises what we intimate in regard to his having got hold of an unsuitable locality for tea. Crowding plants together upon a hillside or land subject to a rush of water may prevent wash, certainly, but will inevitably choke the plants so jammed in, and to open np the soil by this means would expose it to the first contingency. If a plantation needs a wind: guard, the sooner it is abandoned for some less exposed site the better; if people will go up into the clouds for the sake of a pleasant climate like many of the Nilgiri planters have done, they must be prepared to put up with such exigencies as the proceeding entails. Instead of mitigating fungoid growth and lessening the number of insects, the merest tyro knows that the denser the vegetation the greater will be the development of these parasitical pests. Paragraph (f) would seem to imply the intention of permitting the plants between the rows to attain full dimensions, which, would ensure the destruction of either tea or coffee. The concluding remark as to para not being umbrageous enough to require lopping raises a suspicion, in our minds, that "Finem Respice" has got hold of the wrong plants. If leaf is wanted from tea, or coffee cherry is expected to matnre, lopping will have to be adopted, the effect being a free distribution of the gum all round, which can hardly prove beneficial to either frnit or flush, and it will assuredly kill the rubber plant as the same process did in Assam and the Upper Valley of the Chindwin.—Calcutta *Planter*, Oct. 28.

MALABAR-WYNAAD PLANTING NOTES.

Wynaad, Oct. 25.—The weather has been cloudy, muggy and showery during the past fortnight or three weeks, and a good deal of very heavy rain has been recorded. But notwithstanding this, we are still about 10 per cent. below our average to date.

Leaf disease has not attacked Arabica coffee more acutely than usual, except on certain well-defined fields of estates, where the blight seems to recur regularly towards the close of the S W Monsoon. Upon Liberian trees, the rust has, however, been severe, and the coming season's Liberian crops will probably prove disappointing. On the other hand, Arabica is furnished with an abundance of vigorous young wood, and, given a good season, next year's crops should equal, or exceed, those of 1898-99.

Prices of food grains in the local Bazaars do not appear to have been enhanced by the exports from the West Coast ports to Bombay and estate labour has no difficulty in supporting itself on the usual subsistence allowance. Coffee picking has been commenced, but it seems doubtful whether bushel picking will commence much before the middle of next month, excepc on a few favoured properties, which enjoy exceptional climatic advantages. The low prices which have been realised for some months past from the majority of tea gardens in Wynaad, has proved a disappointment to those who confidently anticipated that with the splendid soil all over the plateau (as compared with Ceylon) prices would rule high, with the advent of experienced.

* "Creepers" are unknown in Assam. They are purely a Ceylon production—Ed., *Planter*.

TEA PLANTERS FROM THE "SPICY ISLE."

But, as a matter of fact, the averages, quoted in the public price lists of tea sales, indicate that the teas exported from factories which are under the sole management of Wynaad men, realise better prices than the breaks shipped to London from places "bossed" by ex-Ceylon tea planters. As an instance, one property in particular, which enjoys the advantage of being under the control of its resident proprietor, and which disposes of a great deal of its coarser grades of teas locally to native merchants at 5 as. a pound, (a figure that such tea would probably not realise in Mincing Lane) rarely exceeds 6½d per pound. A leading Ceylon planter, well conversant with the Wynaad, recently expressed the opinion that "improved manufacture" would insure Wynaad teas fetching at least 2 annas a pound in excess of recent prices. There would appear to be a prospect of a further influx of Ceylon planters shortly, and it is to be hoped that these gentlemen will be competent to introduce a more profitable standard of manufacture—should they invest locally.

While the Mysore Planters' Association appears to deplore the gradual depreciation of Nalknad coffee, and its susceptibility to leaf disease, it is noteworthy that where the Coorg bush has been tried in South Sylhet, and in the Straits Settlements, it has not as yet shown signs of the blight in those localities.

Interest in the profitable cultivation of rubber trees in the Wynaad seems to be increasing, but excepting where information is available from Ceylon newspapers, very little appears to be known of the peculiarities of either the Castilloa or Para varieties.

Local buyers are now offering to take the growing pepper crops at R220 per candy, whereas last year's sales did not exceed R180.

The Honourable Mr. G Acworth recently passed through the Wynaad, and appears to have been very favourably impressed with the appearance of the tea properties owned by a leading West Coast firm.—*Madras Mail*, Oct. 28.

THE KINTYRE TEA ESTATES COMPANY, LIMITED.

The following is from the report of the directors, to be submitted at the general meeting, to be held on Wednesday, Oct. 25th, at 12-30 o'clock, at the offices of the Ceylon Association in London, 61 and 62, Grace church Street, E.C. :—

"The estimated tea crop for the season was 460,000 lb., but this has been largely exceeded, the total secured amounting to 498,532 lb., or upwards of 60,000 lb. more than were harvested during season 1897-98. The average cost of production was estimated at 26·81 cents, but a considerable saving on this figure was effected, the actual average cost being 24·66 cents. The directors think these results very satisfactory, and they show careful and economical working. The net profit on the sales of the company's produce amounts to £5,770 4s 4d, and after paying directors' fees, income-tax, and the usual commission to estate superintendents, there remains a balance at profit and loss account of £5,148 1s 3d. The board have authorised the payment, half-yearly as usual, of the preference dividends, absorbing £1,000; they have set aside £500 for wear and tear of buildings and machinery; and they now recommend the payment of a dividend of 8 per cent. for the year on the ordinary shares, which will absorb £3,600 and leave £121 1ls 11d to be carried to next account. A bungalow was built for the superintendent on Ayr estate, and the expenditure therein, with some item for the factory, &c., amounting in all to £488 14s 1d, has been charged to capital account. The average yield of tea, in full bearing was 570lb per acre, and the gross average price realised in London was 7.90d per lb. The sum of £44 12s 10d has been written off the coast advances, as the Ceylon agents advise that the amount is not likely to be recovered. The superintendents have certified that the remainder of the coast advances may be considered good and recoverable. The estimates for the current season point to a crop of 480,000lb of tea, to cost 26 cent per lb, and by the latest advices good progress had been made on each estate towards realising the above quantity.—*H. & C. Mail*, Oct. 20.

HORNSEY TEA ESTATES COMPANY, LTD.

The following is from the third annual report, 1898 99 :—

The directors beg to submit the report and audited accounts for the year closing June 30 last. The crop has weighed out 172,139lb, against last year 146,226lb, giving an increase of 25,913lb. The directors have during the last year sold most of the crop in Colombo, and the result has been satisfactory. The London sales have amounted to only 21,735lb, and the balance of the crop sold on the other side realised an average of 45.40 cents, equivalent to a London price of 8½d per lb. The cost of production, including manure, has been 31.12 cents, against last year 36 cents, or, in sterling, 5d per lb Colombo, against 5¾d per lb. Turning to the accounts, it is to be noted that the profit on working account is almost double that of last year, the result of better prices and a larger crop; expenditure being very little in excess of the previous year. During the twelve months the coast advance account has been reduced by £154 14s 0d, leaving the very moderate amount of £178 16s 11d outstanding. After paying all fixed charges, and preference dividend for the twelve months, and providing for the £126 3s 2d carried forward to debit last year, there is a balance at credit of profit and loss of £561 12s 4d. The directors propose to write off £310 from preliminary expenses account, pay a 2 per cent. dividend on the ordinary shares, taking £240, and to carry forward £11 12s 4d to credit of next year.—Ibid.

PRODUCE AND PLANTING.

Tea Acreage in Travancore.—In consequence of the misleading character of the figures with reference to the area of tea in Travancore published by the Government authorities for the period of 1897-98, which were so excessive as almost to cause a scare in Mincing Lane last year, considerable interest has of late been shown in the matter. We understand that there are about eight thousand acres of three years old tea, and about the same quantity of two years old, in addition to which Kanan Devan Hills Produce Company has put out some six thousand acres, which will no doubt lead to an increase in the crop from this district at no far distant time. The total crops have been as follows:—1893, 1,931,000 lb.; 1894, 2,022,000 lb.; 1895, 2,214,000 lb.; 1896, 2,226,000 lb.; 1897, 2,532,000 lb.; 1898, 2,610,000 lb. The crop during the current season will probably reach three million lb.

The Tea Buyers' Association.—This Association, the outcome of the dispute over the pound draft questions, has amalgamated with the Wholesale Tea Dealers' Association, or perhaps it is more correct to say that the latter has merged into the former.

Rubber Cultivation.—According to the views of Senor Horta, who has recently issued a pamphlet on "Rubber in Guatemala," the climate most appropriate for the growth of the rubber tree is that of the Tierra Caliente, or hot coast lands, at an altitude not exceeding 1,500 feet, and the trees should not be planted in the sun, although the contrary opinion is held, and has been expressed by some authorities.—*H. & C. Mail.*

SCOTTISH TRUST AND LOAN COMPANY OF CEYLON, LTD.

The following is the report by the Directors of the Scottish Trust and Loan Company of Ceylon, Ltd., to the twenty-second Ordinary General Meeting of Shareholders, held at the Company's Registered Office, No. 123 George Street, Edinburgh, on Thursday, the 26th Oct :—

The Directors present their Twenty-second Report, being for the year to 31st August, 1899.

Estates in the Company's Possession.—The Estates of the Company, along with most estates in Ceylon, experienced the effects of the abnormal season 1898-1899, and the yield of Tea fell short of the estimate. Notwithstanding this, the year's working shows fair results.

The Company's Estates now comprising 1,581 acres of Tea in bearing, 151 acres in partial bearing, and 293 acres of young Tea—in all 2,025 acres. Coffee cannot be depended upon for substantial returns; the crop being precarious, and the market at present much depressed.

Factories, Buildings, and Machinery.—The Capital outlay includes the extension of Annfield Factory, wire shoot for Rahanwatte, the planting of new land, and upkeep of Tea not yet in full bearing.

Debenture Debt.—The Debenture debt remains at the same amount as at the close of last year. The sole remaining Bond will mature and be paid off at Martinmas 1899.

Accounts.—The Balance at the credit of Profit and

Loss Account is		£7,065 14 5
And the Directors propose—		
To pay a Dividend of 5 per cent per annum, free of Income Tax .	£2,250	
Note.—Two and a half per cent of this was paid as an Interim Dividend at Whitsunday 1899.		
To pay Bonus of 5 per cent free of Income Tax	2,250	
To transfer to Reserve Fund	1,000	5,500 0 0
Leaving ..		£1,565 14 5

to be carried forward to next Account.

By the death of Mr. William Bowden Smith, the London Agent, in October 1898, the Directors sustained the loss of a sound adviser in all matters relating to the practical working and welfare of the Company, and they desire to place on record an expression of the value of his services. The vacancy in the London Management thus caused has been filled by the appointment of Mr. A Gordon Dickson and Mr. William G. Smith as Joint Agents.

The Director have pleasure in intimating that during the year under review they appointed by Mr. W Herbert Anderson as Resident Director in London, with a general supervision of the Company's affairs. Mr. Anderson's long practical experience as a Ceylon Planter has already proved of much value to his colleagues. In terms of the Company's Articles of Association, Mr. Anderson falls to retire from the Board, and be re-elected by the Shareholders at the ensuing General meeting.

The Director retiring by rotation is Mr. James Haldane, who is eligible for re-election.

The Auditor for the current year falls to be appointed. Francis A. Bringloe, Secretary.

CEYLON TEA AT ZANZIBAR.

We have decided to give this product a trial, because of the healthy appearance of the tea bushes at Miss Thakeray's shamba, Mbweni, planted by Sir John Kirk. These were pruned down in October and flushed well, bearing enough new growth in two months to form a plucking surface and leave six inches of pruning wood. Half a maund of Horagalla, Ceylon, Assam Hybrid, has been obtained and planted in the new nursery at Mpapa and is growing well. This should give us enough plants for six acres, planting five by five, and leave a margin for supplies and distribution. I don't think that Zanzibar will ever enter the lists as a tea producing country, even if low-country varieties are found to flourish here, as the labour-supply is too small and uncertain. The plentiful supply of organised labour in Ceylon is one of the chief reasons why that country has taken the lead in this industry, while Natal is an example where the comparatively adverse conditions of labour have operated unfavourably. In our present unstable condition of labour we could not do more than grow a few acres for local consumption and perhaps induce Arabs and natives to cultivate a few trees for their own use. Another point to remember is that tea is a declining market and is probably already overproduced. —*Zanzibar Gazette.*

THE CONSOLIDATED ESTATES CO.

London, Oct. 14.

I see the *H. & C. Mail* attempts no report of Mr. R. A. Bosanquet's really very sensible and suggestive remarks at this meeting; while it rather bungles what I said in mixing up Rubber and Shade Trees. After very aptly expressing thanks for all connected with the work of the Company, Mr. Bosanquet alluded to his recent visit to Ceylon and to what he saw of the need for liberal cultivation; but he felt that manuring must be judiciously carried out, and he did not quite believe in "bones" for tea. He illustrated the need of taking action against tea pests betimes, by what occurred in the case of coffee; but by no means indicated the cases were alike.

I am much interested in the home campaign to induce all publicans to supply "tea" among other refreshing drinks! Support of this movement would repay Ceylon planters much more than wasting time and thought over the abolition of the Tea Duty—of which, even if desirable (which most people doubt), there is not the remotest chance, with war in South Africa.

Ceylon Green Teas in Canada.—Is Ceylon really exporting any green tea, or is its fair name being used as a handle for the ready sale of green teas from other sources? The following is an extract we have received from the agents of the "Salada" Ceylon Tea Co. at Montreal, dated October 4th :—"You may be interested to hear that we have just had a visit from Mr. Wm. Mackenzie, who has induced our firm to take hold of Ceylon green teas, and after talking the matter over the matter with our principal and Mr. Mackenzie (who were here together on Saturday last) we have decided to go into them, and we believe that there is a great future before them. We believe, in fact, that instead of climbing a very steep hill, as we have done in displacing Japan teas with Ceylon blacks, we have a comparatively easy path in Ceylon greens, and propose to push them for all we are worth." Mr. Mackenzie's next communication on this subject should afford food for reflection to planters who are not now turning out green teas at all.

CEYLON TEA SHIPMENTS.

MEMO OF DISTRIBUTION.

1st January, 1899, to 31st October, 1899, and same period 1898—vide Customs Returns.

Countries.	1899 lb.	1898 lb.	Increase.	Decrease.
U. Kingdom	83,857,219	80,627,843	3,229,376	—
Austria ...	7,491	13,398	—	5,907
Belgium ...	13,099	10,540	2,559	—
France ...	80,470	63,694	16,776	—
Germany ...	304,126	273,825	30,301	—
Holland ...	30,211	22,631	7,580	—
Italy ...	12,471	6,260	6,211	—
Russia ...	2,719,244	2,140,125	579,119	—
Spain ...	14,300	36,150	—	21,850
Sweden ...	57,362	33,230	24,132	—
Turkey ...	15,674	64,434	—	48,760
India ...	442,995	889,408	—	446,413
Australia...	13,210,163	12,662,760	547,403	—
America ...	2,657,330	1,907,950	749,380	—
Africa ...	236,775	317,000	—	80,225
China ...	1,174,743	977,643	197,100	—
Singapore...	57,946	51,113	6,833	—
Mauritius...	80,566	14,759	65,807	—
Malta ...	226,767	172,794	153,973	—
Total Export 10 months...	105,198,952	100,285,557	5,516,550	603,155
Less decrease ...			603,155	
Net Increase, 1898-99 ...			4,913,395	

1897...94,386,043 lb.
1896...88,433,172 lb.

Exports from United Kingdom to 30th September from Gow. Wilson and Stanton's Circular.

	1899 lb.	1898 lb.
Countries in Europe ...	5,494,425	5,035,871
U.S. America ...	945,212	1,070,275
B. North America ...	1,296,009	1,426,855
Newfoundland ...	192,959	156,625
Other Countries ...	984,184	1,141,914
Total lb. ...	8,912,789	8,831,540

	1899 lb.
United Kingdom Imports ...	83,857,219
Re-Exports	8,912,789
Leaving for Consumption in U.K. ...	74,944,430

TROPICAL CULTURE IN AUSTRALIA.

THE LABOR PROBLEM.

Below we quote one of the leading articles, which appeared in the Sydney *Daily Telegraph* of Monday, October 23, in which the benefits, which will accrue to North Queensland agriculturists when Federation is established, are pointed out and attention is also drawn to the success which has already attended the cultivation of many products, which we, in Ceylon, are interested in. One of the chief difficulties in the way seems to be the labour question, as the prejudice against the introduction of "colour" is very strong in Australia, not only on account of labour, but also from the fear of a half-caste race springing up in the community and the article in question comments on this point. No trade will be regarded as worth having if it involves any menace to the principle of a "White Australia." Fiscal difficulties are also alluded to, but the article itself is well worth perusal :—

TROPICAL CULTURE.

It can hardly be questioned that Federation and the extensive import duties which will accompany it will open a field for tropical cultivation, and Northern Queensland and probably the Chinese in the Northern Territory will be enabled to reap a harvest out of the needs of the southern markets. Hitherto it has only been a question of tropical labor which has stood in the way of the extension of such cultivation, even with the southern markets alienated by high duties. But with those markets freed and protection against the world outside Australia, there will be added inducements of a very powerful description to cater for consumers within the commonwealth. In New South Wales the sugar industry can thrive upon £3 per ton protection, and in Queensland it can hold its own even without the favoritism it is certain to secure at the hands of the Federal Parliament. Last year Australia turned out enough sugar to cover its entire consumption, and it may therefore be taken as beyond controversy that in the case of this most important of all tropical products the problem of internal production has been already fully solved. But sugar by no means covers the entire field. Those who perused the Queensland Financial Statement delivered by Mr. Philip on the 3rd inst. must have been struck with the amount of attention now being directed in that colony towards other forms of tropical culture. In 1896 Queensland put 138 acres under coffee, and last year this was increased to 432 acres, while in 1899 a further considerable extension has been notified. Queensland is already in a fair way to supply her own market, and with similar duties on imports into Australia she may look forward to supplying a very much larger one. Rice cultivation is entirely in its infancy in Queensland. But the area of 863 acres in 1898 was double that of 1897, and the yield was over 44 bushels to the acre. It may be argued that rice stands specially in need of colored labor, but the crop is highly prolific, and even a halfpenny per lb. duty will be found a great incentive. Queensland is also turning her attention to tobacco cultivation, more particularly to cigar tobaccos, and is likely to make a better show than the southern colonies have done. In times past Queensland has grown good cotton, arrow-root, and other tropical products, and of the suitability of the soil and climate to such crops there can be no question. The difficulty has been to offer sufficient inducement to growers, and there are many directions in which a large and protected market will act as a powerful stimulant.

That through the entire range of tropical culture the labor problem is pretty certain, sooner or later, to crop up is a point we shall not now attempt to discuss. It has to be recognised that the United States, with its £200,000,000 worth of tropical culture annually, and its entire command of the cotton markets of the world, could never have reached its present exporting and internal manufacturing power without the negro. The presence of the negro, however, has created a growing racial trouble, which renders even this trade dear at the price. We may take it for granted that no such price will be paid here, and that no trade will be regarded as worth having if it involves any menace to the principle of a "white Australia." But that will not be the question now in Australia. The problem is that of supplying a favourable internal market with products upon which already high import duties are levied, and there is really no reason why even the great revenue-yielding import of tea should not be covered by the northern producer. Thus Federation is more than likely to bring in its train a very extended utilisation of the tropical north, much more so than is at present understood. But from a revenue standpoint there will be serious trouble. The duties now paid upon tropical imports are high, and play a large and important part in our State finances. It has always been a safe source of income to levy high duties upon such products in the southern colonies, because internal supply was impossible. It will be different in the future, and the prospect appears to be that gradually, but surely, internal markets will command a growing share of attention to the possible detriment of production for export. That Australia must continue to export largely is beyond question, because the interest on her indebtedness has to be covered in that way, but there is at present a very large excess

of exports, which enables us to pay for our extensive imports, and that may be affected. This is one of the problems which Federation will open up in the probably not distant future, and it bids fair not only to at some important points direct employment into other channels, but gradually to alter the system of taxation. We shall have in the future to depend less upon Customs duties; more upon excise and direct taxation, as is now the case in all the older countries of the world. In a country differing so vastly as Northern and Southern Australia there are a number problems of a similar nature which are bound to arise.

ENGLISH TEA IMPORT DUTY.

The following is the return forwarded to us by the Planters' Association of Ceylon. It was unavoidably crowded out from the *Observer* on Monday:—

Year.	Quantity of China tea consumed annually in the U. K.	Quantity of Indian and Ceylon tea so consumed.	Total quantity so consumed.	Average rate of duty.		Average price in bond.		Average quantity consumed per head.	
	lb.	lb.	lb.	s.	d.	s.	d.	lb.	oz.
1801-04	24,016,235	..	24,016,235	1	7	3	0	1	8
1805-09	23,325,495	..	23,325,495	3	0¾	3	3¼	1	6
1810-14	24,264,949	..	24,264,940	3	1½	3	4½	1	5
1815-19	24,997,373	..	24,997,373	3	11½	2	0¼	1	4
1820-24	26 956,571	..	26,956,571	2	9¾	2	10	1	4
1825-29	29,402,033	..	29,402,033	2	5¾	2	5½	1	5
1830-34	31,678,328	..	31,678,328	2	2½	2	2½	1	5
1835-39	36,764,065	...	36,764,065	2	0½	1	8	1	7
1840-44	37,588,274	..	37,588,274	2	2½	1	10½	1	6
1845-49	47,200,093	...	47.200,093	2	2¼	1	1	1	11
1850-54	56,124,305	...	56,124,305	2	0	1	2½	2	1
1855-59	69,000,000	..	69,000,000	1	6	1	5	2	8
1360-64	82,0[illegible]0,000	...	82,000,000	1	4	1	5	2 27	lb
1865	96,000,000	...	96,000,000	0	6	not available		3·00	,,
1866	97,681,000	4,584,000	102,265,000	0	6			3·42	,,
1867	104,628,000	6,360,000	110,988 000	0	6			3·68	,,
1868	99,3[illegible]9,000	7,746,000	106,815,000	0	6			3·52	,,
1869	101,080,000	10,716,000	111,796,000	0	6			3·63	,,
1870	104,051,000	13,500,000	117,551,000	0	6			3·81	,,
1871	109,445,000	13,956,000	123,401,000	0	6			3·92	,,
1872	111,065,000	16,656,000	127,661,000	0	0			4·01	,,
1873	111,665,000	20,216,000	131,881,000	0	6			4·11	,,
1874	118,751,000	18,528,000	137,279,000	0	6			4·22	,,
1875	122,107,000	23,22[illegible],000	145,327,000	0	6			4·43	,,
1876	123,364,000	25,740,000	149,104,000	0	6			4·49	,,
1877	123,300,000	27,814,000	151,114.000	0	6			4·50	,,
1878	120,652,000	36,744,000	157,396,000	0	6			4·64	,,
1879	126,340,000	34,092,000	160,432,000	0	6			4·68	,,
1880	114,485 000	43,836,000	158,321,000	0	6			4·57	,,
1881	111,715,000	48,336,000	160,051,000	0	6	see below		4·58	,,
1882	114,462,000	50,496,000	164,958,000	0	6			4·69	,,
*1883	111,780,000	68,000,000	179,780,000	0	6			4·82	,,
1884	110,843,000	82,117,000	193,060,000	0	6			4·90	,,
1885	113,514,000	68,895,000	182,409,000	0	6			5·06	,,
1886	104,226,000	74,665,000	178,891,000	0	6			4·92	,,
1887	90,508,000	93,053,000	183,561,000	0	6			5·02	,,
1888	80,653,000	104,763,000	185,416,000	0	6			5·03	,,
1889	61,100,000	124,500,000	185,600,000	0	6			4·99	,,
1890	57,530,337	136,478,155	194,008,492	0	4			5·17	,,
1891	52,287,304	150,169,533	202,456,837	0	4			5·36	,,
1892	34,483,408	172,630,296	207,113,704	0	4			5·43	,,
1893	35,735,722	172,361,663	208,097,385	0	4			5·41	,,
1894	25,805,313	188,535,731	214,341,044	0	4			5·52	,,
1895	31,433,014	190,367,123	221,800,137	0	4	..		5 65	,,
1896	24,549,936	203,235,375	227,785,509	0	4	...		5·73	,,
1897	21,372,030	210,027,748	231,399,778	0	4	..		5·81	,,
1898	19,512,000	215,902,096	235,414,105	0	4	...		not avilable	

Average prices of INNIAN ANN CEYLON TEAS IN BONN from 1881 to 1894.

Years.	Indian. s. d.	Ceylon. s. d.		Years.	Indian. s. d.	Ceylon. s. d.
1881	1 5	0 11¾	..	1888	0 10¾	0 11½
1882	1 3	1 0¾	.	1889	0 10¼	0 11¼
1883	1 2½	1 3¼	..	1890	0 10½	0 11
1884	1 1¾	1 2¾	..	1891	0 10¼	0 10
1885	1 2½	1 3¼	..	1892	0 10	0 9½
1886	1 0	1 1¼	...	1893	0 9¼	0 9
1887	0 11½	1 1	...	1894	0 9¼	0 8½

* The importation of Ceylon tea in large quantities commenced in 1883.

TEA GROWING IN MEXICO.

About 300 Japanese colonists located two years ago in the southern part of Oaxaca, near Jimillepec under authority of a concession granted by the Mexican Government. The colony has been experimenting in tea-growing and has made such a success that 5,000 more Javanese men and their families are to be brought to Mexico to join the original colony. — *Glasgow Weekly Mail*, Sept. 23.

A VISIT TO THE SEYCHELLES.

IMPRESSIONS OF A CEYLONESE.

Mr. J. R. Dissanaike, who returned to Ceylon the other day by the steamer "Khandalla" from Bombay, is a son of Mudaliyar A. Dissanaike, the retired President of the Village Tribunals. After a course of training at the Ceylon Technical College and after some experience in survey and other connected work, under Government, he left two years ago for the Seychelles islands, accompanied by, and as assistant to, Mr. Waddell, of the Ceylon P. W. D., who was seconded for service in these islands in the construction and repairing of roads and otherwise improving the internal communication of the islands. Uufortunately, Mr. Waddell had to resign before he could have accomplished much, owing to ill-health; but Mr. Dissanaike was able to continue to the end of his term, the climate (which much resembles that of Ceylon) agreeing with him. A correspondent, who had a talk with Mr. Dissanaike, informs us that he learned from him that there are now in Máhé, where the latter was stationed, nearly twelve miles of good road, besides many more miles of bridle and foot paths. The majority of the inhabitants, (creoles and niggers) however, are slow to use them, especially for transport purpose, as they are prejudiced in favour of their boats which are called "perogues" and which are "gulled." The old roads traversing the island are more like footpaths than roads, owing to the steep gradients over which they pass, due to the rocky and mountainous nature of the islands.

CORAL MACADAM

is chiefly used on the roads, with occasionally some metal, which is of a very hard character indeed.

To Mr. Dissanaike the islands presented a very lovely and picturesque view as he approached them by steamer from Bombay and what was most remarkable to him was the pretty and varied colour of the water within the reefs near the shore, due to the coral formations of different tints. The view of the town of Mahé from the harbour is also very picturesque, dotted as it is with houses and other buildings on hilly prominences here and there. The houses are built of timber, on raised masonry pillars, a few feet above the ground, with shingle roofs; but accidents by fire are very rare. With the vegetation of Máhé. Mr. Dissanaike was quite at home—most of the trees and vegetables found in Ceylon growing there, such as coconuts, jak, breadfruit, oranges, pineapples, bananas, pink apples (jambus), lime, tamarind, sugarcane, manioc, sweet potatoes, bandakai, etc. Coffee, cacao, cinnamon and cloves also grow there; but the latter two products appear to be neglected, especially the cinnamon, the natives not knowing how to prepare it for the market, or the uses which it is put to. Lime and tamarind, are scarcely used by the creoles and negroes, and consequently are allowed to rot under the trees. Some of the fruit and vegetables are exposed for sale in the town; but in the interior there is very little demand for them, except manioc and sweet potatoes, which, with fish, is the principal diet of the creoles and niggers.

COCONUTS,

too, go very little into human consumption and are chiefly prepared into oil for export; while a portion of

the oil is also used in the local soap-manufactory in the immediate neighbourhood of the town.

The chief industry in the Seychelles is, of course,

VANILLA GROWING

which is mostly in the of hands French settlers, creoles and niggers, though there are plantations belonging to Europeans. The vine is grown on supports for which live trees six to seven feet high are utilized, and comes into bearing in two or three years when handled in the usual manner.

Beside the creoles and niggers, the population of Máhé include English and French settlers. All seem to be peaceful and contended and are very hospitable to strangers. Serious crime is seldom or never heard among them, although there is a chief court and police court in the town—in fact during the two years' of Mr. Dissanaike's residence in the island, he did not hear of a single case of homicide.

The peoplo are chiefly Roman Catholics, and the French priests, who minister to them, take a great deal of interest in the education of the masses, and have several schools and churches all over the island. There is also a Government school in the town, beside two Protestant Churches—one in the town and the other in the country. The language chiefly spoken in the island is French, but the creoles have a peculiar dialect of their own.

Rice is the

STAPLE FOOD

of the settlers, but the creoles and niggers mostly live on manioc and sweet-potatoes and fish. In the town a couple of bulls are slaughtered twice a week —on Wednesdays and Saturdays—and the meat is sold at fifty cents a lb. Pork and turtle flesh can be had in abundance and pigs are reared in large numbers. Fish is very cheap and in point of relish is superior to the kinds found in Ceylon. Hardly any mutton or goat flesh could be had, while chicken and eggs too are scarce. A kind of bird's eggs of a smaller size than hen's eggs are brought at a certain season in the year, from a neighbouring island, and they are sold at Màhè, at about half a cent each. Turtles, when caught, are kept in a pond near the shore, which at low tide runs quite dry, and then the poor creatures undergo much suffering. There are no hotels except a boarding-house kept by a creole woman; but the respectable portion of the community seldom or never patronize it.

There are no rivers in Màhè, except streams not more than four or five feet at their widest parts; and the people chiefly depend on these for their water supply, though the town is served from a tank a few hundred feet about it, by pipes; but often trouble is experienced with the latter.

There are pretty seashells to be found all over Màhè, while coco-de-mer is the principal natural feature of Praslin, the next biggest island in the group

Steamers plying between Bombay and Zanzibar call at Màhè once a month for passengers and cargo; but not unfrequently men-of-war of different nations pay visits to Port Victoria, when the town presents a more animated scene than usual, with "Jack ashore."

CEYLON FISHING CLUB.

ANNUAL REPORT.

(*For the season ending 30th September, 1899.*)

The annual report of this Club was read at the general meeting held on the 26th November, 1898, by the then hon. Secretary, Mr. S M Burrows, when accounts of the Club to the end of October, 1898, were submitted, and the same office-bearers were unanimously re-elected for the ensuing year. Two general meetings have been held since: one on the 8th February and the other on the 14th April, 1899. In view of the resolution passed at the general meeting of the 26th November, 1898, fixing the closing of the open season for Trout for the 30th September, the accounts and the report are made up to the end of September, instead of October as heretofore.

FINANCE.

2. The accounts of the Club up to 30th September are appended to this report. (Appendix A.) The financial position of the Club is satisfactory. The balance standing to the credit of this Club on the 30th September, 1899, is R364·69. A statement of probable revenue and expenditure for the ensuing year is also appended to this report. (Appendix B.)

THE OUT-TURN OF OVA.

3. Three consignments of ova were received from England during the year; two consignments of 20,000 each of the ordinary brown Trout ova (Fario) at a cost of R648·76, and one consignment of 10,000 rainbow Trout ova (Irideus) at a cost of R216·19. The total out-turn of fry from the first two consignments was 11,670 fry, distributed as follows:—

4,230	"Hatchery Stewponds," Nuwara Eliya.
2,500	Mr. Farr, "Horton Plains."
1,500	Mr. Ross-Clarke, "Calsay," Nanuoya.
1,000	"Queen's Cottage Stewpond."
840	Nuwara Eliya Streams.
700	Mr. Brown, "St. Leonards," Udapussellawa.
500	Mr. Cuff for Maskeliya Club.
200	Mr. J Fraser, "Abbotsford," Nanuoya.
200	Mr. Cuff, "Patna Streams," Maskeliya.
11,670	

RAINBOW TROUT.—(*Salmo Iridens.*)

4. Out of the 3rd consignment, that of rainbow Trout ova, only 1,510 fry were available for distribution; this small out-turn is attributed mainly to the faulty packing of the ova, to which was due the fact that a very large percentage of the ova were found squeezed into pulp on arrival here. The healthy ova, however, hatched out very well, the percentage of deaths being few. The young Rainbow fry have thriven very well, and it seems probable that the introduction of this variety will prove a decided success. There are two disadvantages in importing Rainbow Trout ova: (1) that the ova hatch out within 25 days of fertilising, and so it is difficult to get them delivered from Guildford in time, a certain percentage of the ova having hatched out and died before reaching Nuwara Eliya; and (2) the ova reach Ceylon rather late in the season, when the rains may have commenced, the temperature of the water has risen, and no precautions can prevent the deposit of some sediment on the eggs which is fatal to their hatching out. One half of the consignment of the Rainbow ova was ordered out for Mr. Wilson-Wood, who paid half the cost of the consignment, viz. R126·66. The distribution of the Rainbow fry was as fallows:—

801	Mr. Wilson-Wood, "Drayton," Kotagala.
324	"Hatchery Stewponds," Nuwara Eliya.
150	Mr. Farr, "Horton Plains."
75	,, Ross-Clarke, "Calsay," Nanuoya.
75	,, Brown, "St. Leonards," Udapussellawa.
75	,, Lyall, "High Forest," Maturata.
10	,, J. Fraser, "Abbotsford," Nanuoya.
1,510	

The notes made at the time when this consignment of ova was unpacked are appended in Appendix C., a copy of which, it is suggested, should be forwarded to Messrs. Andrews & Andrews for their guidance with the orders for the forthcoming season.

It is suggested that two consignments of Brown trout, 20,000, and one consignment of Rainbow

trout, 10,000, be ordered for the coming season from Messrs. Andrews & Andrews of Guildford.

STEWPONDS.

5. In compliance with the Resolution No. 3, passed on the 26th November, 1898, most of the young fry were turned into Stewponds, of which three new ones, A, B and C, were constructed at the hatcheries, two on the Horton Plains, two on Calsay, Nanuoya, one at St. Leonards, Udapussellawa, and one at High Forest, Maturata. The upper pond on the grounds of the Queen's Cottage was also utilised for the purpose.

At the Hatcheries, 4,230 Brown trout fry were placed in four stewponds, and 324 Rainbow Trout fry in two stewponds. These stewponds were emptied on the 1st, 2nd and 4th October, immediately after the close season had commenced, with the following results. The number of Brown Trout fry was 796, the greatest length being 7 inches. and the average was 4 inches, their age being then 7½ months. The number of Rainbow fry was 170, and the average length was 4½ inches their age being then 6 months. The whole seemed healthy, and in fair condition, the Rainbow fry especially being very game, thriving excellently on their diet of fresh water shrimps: there was, however, a great diversity in the growth of the consignment, a number having hardly grown at all.

At the time when the Brown trout fry were turned out into the stewponds, the daily mortality was serious ; and it is probable that they were not, as a whole, in healthy state. Whenever any fry show signs of weakness they are attacked and eaten by the healthier fry, and it is probable that numbers were thus disposed of when quite small. Very few dead were detected. The Rainbow fry on the other hand were always healthy while in the troughs, an admixture of earth every few days to the sand at the bottom of the troughs seeming to neutralise the ill effects of the pollution of the water arising from the decay of food which had not been eaten. In the stewponds, too, they did not fight like the Brown trout, nor are they such depraved cannibals.

A fissure occurred in the bottom of stewpond E, through which may fry escaped into the small stream adjoining it, where they were seen working their way down to the river. One thousand fry had been placed in this pond, but when drawn only 53 were left.

OUT-TURN FROM STEWPONDS.

(A.) NUWARA ELIYA.

6. (I) The result of the out-turn of fry into Pond A, the first of the new upper ponds.

Consignment received on 12th February, 1899. 1,250 fry put into the pond about 15th April.

This pond was drawn on 2nd October, 1899, 236 fry were taken out in good condition, great variations in growth.

19	...	7" long
30	..	6" long
50	...	4" to 5"
137	...	varying from 4" to 2"
236		

This pond was probably too crowded. Six were put back ; all the rest were put into the Nuwara Eliya river.

There were three very small fry which have not grown at all since they were put in April, these have been returned to the troughs.

(2.) The out-turn of the Brown trout fry put into B, the second of the Upper Pond was as follows :—

Consignment of Brown Trout ova arrived on the 12th February, 1899. Put out into the pond about the 15th April, 1899, 1,750 fry.

Pond drawn on the 4th October, 1899. 325 fry were taken out.

20	about	7" long
50	do	6" ,,
100	do	5" ,,
100	do	4" ,,
55	do	3" and 2" long
325		

All appeared to be healthy. They were distributed as follows :—

223	Nuwara Eliya Main Stream.
96	Hawa Eliya Stream.
6	Back to the Pond.
325	

(3.) The out-turn of the Brown trout fry put into the Stewpond D, in front of the Hatchery, was as follows :—

Consignment of Brown trout ova received on the 12th February, 1899. Put into Stewpond about the 1st May, 1899. About 230 fry were put in.

Pond drawn on the 4th October, 1899. 182 fry were taken out in good condition.

10	about	5" long
100	,,	3" to 4" long
72	,,	2 to 1½" ,,
182		

They were all put into the Nuwara Eliya Stream.

(4.) The out-turn of the Rainbow Trout fry put into C, the large new Stewpond was as follows —

Consignment received on 25th March, 1899. 250 put into Stewpond on 6th May, 1899.

Pond drawn on 1st October, 1899, 150 fry were taken out in good condition. Great variation in growth. Greatest growth (15 fry) 7" ; smallest growth (25 fry) 2" ; average growth about 4¼" ; six large fry (6" long) left in Pond.

The remaining 144 were distributed as follows :—

72	between the Tavern and Rose Bank Bridge
47	Hawa Eliya Stream.
25	Sita Eliya Stream.
144	
6	back into the Pond.
150	

(5.) The out-turn of the Rainbow fry put into Pond E at the back of the Hatchery :—

Consignment of Rainbow Trout ova received on the 25th March, 1899, and put into Stewpond about the 10th of August, 1899. 23 fry were put in.

20 fry were taken out on the 4th October when the Pond was drawn.

4	about	5" long
10	,,	3" ,,
6	,,	2" ,,
20		

the Queen's Cottage pond is largely due to the fact that a pair of Kingfishers settled by the pond, and that otters infest the pond and cannot be kept out through want of fencing.

(B.) HORTON PLAINS.

Mr. T Farr reports as follows regarding the fry placed in the Horton Plains Stewponds, viz. —1,500 Brown Trout fry and 150 Rainbow fry. (1,000 Brown Trout fry were turned into a stream falling into the Horton Plains River.)

9th August, 1899.

Dear Sir,—In reply to your letter of August 8th, I do not think the time has yet arrived to transfer the trout from the ponds to the river, therefore I can only by observation guess at the number of fish in each.

They may, so far, I think, be considered a success, and I should estimate the pond into which 1,500 fry were placed as containing say 500 to 700, and the rainbow fry should turn out 50 per cent of the number put in.

I may mention that the growth of fry in both the ponds is very uneven—some of the fish being very strong and of good size whilst others have grown very little.

The Rainbow Trout appear to have grown better than the Faro.—Yours faithfully,

(Signed) T. FARR.

(C.) OTHER STEWPONDS.

(I.) Calsay, Nanu Oya.—Mr. Ross-Clarke reports of the "Calsay" Stewponds, where 1,500 Brown trout fry and 75 Rainbow fry were placed, as follows :—

July 25th, 1899.

Dear Sir,—On the 19th instant I emptied my two stewponds with the following results :—

the Top Pond contained 196 trout
the Lower Pond ,, 305 ,,

out of 700 and 800 put in ; the following day I took 209 up to Ambewella and turned them in there in good condition, 40 were turned into the Rajah Patna stream, several 5 inches long, and the average about 4 inches.

I returned 250 about an average of 2½" to the Stewponds, where they ought to thrive well now that the bigger fish are gone.

I am of the opinion that the larger fish were preying on the smaller latterly, hence the perhaps rather small out-turn. During the five months I only found some ten dead ones which were picked out, they were in very good condition and appeared to have died from enlarged liver, with the exception of one which had his tail bitten off.

The Rainbow trout are doing very well and are of a fair size, one dead and one was found so far.

I propose keeping the 250 in the Ponds for another three months or so, or until they reach a size of 4" or 5."

These are the figures :—

Took out of Top Pond ...	196	
,, ,, Lower ,, ...	305	
Turned into Ambewella Stream		209
,, ,, Rajah Patna ,,		40
Returned to Stewponds		250
Escaped		2
	501	501

Yours faithfully,

G. G. Ross-Clarke.

PRODUCE AND PLANTING.

Keeping their Packers up.—In this review of the trade of India during 1898, Mr. O'Conor proffers comfort to Indian tea planters. He points out that last year the outturn of Indian tea was the largest on record, giving a total of 157 million pounds, being more than double the quantity exported thirteen years ago. When a limited market is found in conjunction with an unlimited supply, the inevitable result is a heavy fall in prices. Yet Mr. O'Conor would not have Indian planters despond. He recalls the fact that it took Indian tea twenty years to drive Chinese tea out of the market, and he reminds us that Indian tea is at present consumed in a comparatively limited area. A very large proportion of the white race of the world does not yet consume tea Mr. O'Conor warns the planters—by the way, they are well aware of the fact—that in their efforts to force their way into these huge untapped markets they must be prepared for a struggle as strenuous as that undertaken by them when they entered the lists against China tea. But with courage and perseverance there is no reason why they should not forge ahead.

Really!—The writer on "Trade Topics in "The Grocer" has the following:—"Now that the pound tea draft question is settled, it is not surprising to learn that those who proposed its abolition are feeling the results of their ill-advised attempt to abolish it. At a meeting of one of the large tea-producing companies the other day, the chairman said there was no doubt that the falling-off in trade which they had experienced was due to the agitation in connection with the question. It would, of course, be wrong to rejoice too loudly over the victory which has been achieved, at the same time it is satisfactory to note that those who stirred the matter up have learned that they cannot attack the distributing trader with impunity. It is certain that only a few even now fully realise the importance of the issues involved in that struggle, but it is to be hoped that it will be very many years before we shall again witness such an attempt to interfere with the rights of such a large body of traders, as is the retail food distributing industry of this country." It should be noted that his majesty, the "distributing trader," must not again be disturbed in his beneficent work of distributing tea at very profitable prices to the consumer, and any further attempt to interfere with his right will—well, it is too awful to contemplate what might happen, so we will consider the incident closed.—*H. & C. Mail*, Oct. 27.

THE PUBLIC SALE DAYS.

A report has reached us to the effect that certain parties are agitating for some alteration of the days for the public auctions of Indian and Ceylon Tea in Mincing Lane. It is perhaps too much to expect that any state of finality will ever be reached in regard to tea matters, but as the changes proposed are in our judgment rather opposed to the best interests of the whole body of buyers and, therefore, indirectly antagonistic to the interests of the sellers, we make no apology for examining the arguments put forward pro. and con, more especially as we took considerable interest in the arrangement of the present system, and consider it too satisfactory to be rashly disturbed.

From a circular emanating from the secretary of the Tea Buyers' Association we learn that the present practice is objectionable to some of its members, but whilst we do not claim for the present arrangements absolute perfection, we should have been glad to know why and wherein it is objectionable, and this is not stated. There are manifest advantages to buyers in

knowing at the beginning of the week how much tea is to be offered during that week, as it will be evident to any one that no buyer will operate freely on Monday if he is not absolutely certain that similar tea from the same garden will not be in print the next morning for sale on Thursday. Such things have happened before to-day, when every importer of tea was a law to himself; and when, perhaps, well satisfied with the sale of his tea effected on Monday, he cheerily ordered another invoice to be offered on Thursday. Buyers generally do not like to be treated in this manner, and we think that over a course of years the importer would find such a course of action would destroy confidence. Take the Assam Company method of procedure for example. For years past they have regularly offered a catalogue of tea once a fortnight. Buyers know they will not have any more for another fortnight, and it is matter of notoriety that the relations subsisting between the Assam Company and their regular buyers in public sale is of a most friendly character. No doubt there are difficulties to be encountered in every human arrangement, and the efforts of those at the fount of action should be to minimise those difficulties by effecting some general plans which on balance of advantages against disadvantages will show the largest surplus on the credit side. It is for this reason that we strongly deprecate any disturbance of the present system.

An ideal plan would possibly be to have one large sale at the commencement of each week, and no more for the remainder of that week, but in short winter days that would be clearly impossible, even if physically within the capabilities of buyers and sellers to get through a week's work in one day. But the next best thing is to have a large sale catalogued for Monday, and get on with its disposal as far as possible on that day, concluding automatically at four o'clock, and finishing what is left unsold on the following Wednesday. Buyers then know exactly what they have to deal with in the week, and the confidence they feel in the position of affairs enables them to act freely and boldly, which is clearly in the interests of the sellers. Gradually but surely during the last twenty years the tendency has been for less and less tea business to be done towards the end of the week. To offer a sample in a country town on Friday or Saturday means either that the local buyer has supplied his wants on the earlier days of the week, and now prefers attending to his own customer's wants; or if he does entertain samples the upshot in a majority of cases is that he says he will wait to see what comes out of Monday's sale. Hence in the eyes of Mincing Lane dealers public auctions on Thursday and Friday, the purchases in which have to be forced on unwilling country buyers on Friday and Saturday are by no means favourably viewed.

For this reason we strongly maintain our opinion that the present system is the best that has yet been devised. If any small change were to be made it should rather be in the direction of discontinuing Thursday's Indian tea sale, and allowing whatever portion of the Ceylon sale of Tuesday was left over, to be finished on Thursday. But we deprecate such action as the Tea Buyers' Association contemplate in holding a large sale of Indian tea on Thursday; for the reasons we have assigned above we think it is foredoomed to failure.
—*H. and C. Mail*, Oct. 27.

THE KINTYRE TEA ESTATES COMPANY, LIMITED.

The third ordinary general meeting of the shareholders of the Kintyre Tea Estates Company, Limited, was held at the offices of the Ceylon Association in London, 61 and 62, Gracechurch street, on Wednesday, Oct. 25.

The Chair was occupied by Mr. G A Talbot, Chairman of the company.

The Secretary read the notice convening the meeting.

The Chairman, in moving the adoption of the report and accounts, said: The report which has been circulated among you will, I presume, be taken as read. It is with no small satisfaction that we are able to present this report to you, for if you look back upon the history of tea during the past three years you will observe that circumstances have occurred which have made it almost impossible to realise the estimates made when the prospectus was issued, and I think you will agree with me that in paying 8 per cent on the ordinary shares we have fully anticipated what was promised last year, and what many other companies were unable to perform. The circumstances which have led to the reduction of profit in tea are chiefly in the fall of price on the London Market, a rise of 2nd in the exchange, which has increased the cost of production by ¼d per lb, and so reduced the profits, and the unfavourable weather of last year. The circumstances, though at the time they were looked upon as misfortunes, have really been blessings in disguise, for the fall of price on the London Market has tended to increase the consumption, and the rise in exchange has certainly stopped the further planting of tea in Ceylon, besides giving investors the advantage of what may be looked upon as a fixed exchange. This, in my opinion, is very much better than the uncertain one which was common when this company was formed, when the finances of India were more or less demoralised, and when it was felt that something of the kind was greatly needed. As regards the bad season, it has been the cause of the great bulk of cultivation being checked. When I was in Ceylon during the early part of this year I saw a good deal of tea planted on old worn tea-land that had been abandoned. There is no doubt that this tea must go out of cultivation, and if this is so, we must regard the production of tea as having reached its limits. This is a benefit for those who are able to produce tea, for with a gradually increasing demand, our prices are bound to be on a firm basis. Next we come to last year's working. There was a great deal of anxiety about what were called tea pests, but we are glad to tell you that in spite of this fear, we produced 570 lb. per acre as against 519 lb. for the previous year. Then a word about the cost of production. This has been reduced to 24 2-3 cents per lb. f.o.b., which, considering that this company holds two-thirds of its estates in Ceylon on the high-lying ground, I think you will agree with me is very good indeed. Our agents and our superintendents on the estates deserve our warmest thanks for their careful management, for it is chiefly through them that these better results as regards costs have been obtained. I must mention, however, that I think it will be extremely difficult, and, perhaps, impossible, to maintain this low cost, for, with the extensions in manuring that are desirable and the renewal of buildings, this rate, which is an extremely low one, may be exceeded. The amount of our profits, therefore, the rate of production

being fixed, depends on the price on the London market, as is the case with all producers. I think we may confidently expect that the prices will not diminish, in fact, we may reasonably hope that they will considerably improve. I now move the adoption of the report and accounts, and before putting it to the meeting I shall be very pleased to answer any questions, any, shareholder may wish to ask.

The proposal was seconded by Mr. W Nevett.

In reply to questions from Mr. Fort, and Mr. Gibson, both of whom, in the course of their remarks, congratulated the company on its results, the Chairman stated, as regarded the great discrepancy between the income-tax for last year and for this year, the explanation was that on the one side the income-tax was worked on a three years average, and on the other that the previous two years income-tax came into the calculation. The cost of shipping the tea in Colombo is half a cent. per lb.

In reply to a question by Mr. Gibson as to the advisability of having an interim report and dividend, the Chairman said that he did not think they could hold out any hope as regarded the interim report. It was quite an unusual request, and he did not think it would be of much utility, in fact, if they took last year as an example, when there was a very bad season it would go very much against the shares. As regarded the interim dividend, it was customary for a good many tea companies to pay one, but he did not think either that it influenced the shares, or that it benefited the shareholders. However, the directors would consider the suggestion.

The Chairman then proposed that a dividend of 8 per cent should be paid on the ordinary shares. This was seconded by Mr. Baumann, and carried unanimously.

On the proposal of the Chairman, seconded by Mr. Nevett, the retiring director, Mr. Baumann, was unanimously re-elected.

Mr. Fort proposed, and Mr. Gibson seconded, the re-election of the auditor. The motion was carried.

The proceedings closed with a vote of thanks to the Chairman.—*Home and Colonial Mail*, Oct. 27.

THE WYNAAD TEA COMPANY, LD.

The following is from the report to be presented at the fifth annual meeting of shareholders, to be held at No. 20, Eastcheap, at the office of the Ceylon Tea Plantations Company, Limited, on Monday, 30th Oct. :—

The directors, in presenting to the shareholders the profit and loss account and balance-sheet for the year ending March 31, 1899, wish to explain that the reason the accounts are for eleven months only, is due to a request made by the managing director in India that the financial year in future shall finish at the end of March, instead of the end of April as heretofore. The working for the past season has resulted in a net profit of £728 2s 9d, after crediting the block account with the proceeds of tea sold from the Cootacovil Estate; this profit the directors propose to write off the debit balance of last season. The coffee crop turned out fully 51 tons, and was the largest gathered for some years, and the directors were fortunate in having sold it at the high figure of 78s c.i.f., before the great fall in the value of coffee took place. The pepper crop of about 14 tons was also sold for arrival at the satsfactory price of 45s 6d per cwt., whilst the first pluckings of tea, viz., about 15 lb., from the Cootacovil estate from the 1895 plantings, realised an average of 7½d per lb. The net proceeds of tea, coffee, and pepper during the season 1898-99, after deducting proceeds of Cootacovil tea which has been carried to block account, amount to £3,957 2s 7d, and the expenditure in India to £2,413 11s 7d, leaving a credit balance of £1,543 11s on the season's operations in India. The manager in India reports condition of the estates as most satisfactory, and that the tea leaf is coming in so fast that further machinery for rolling and firing is necessary. He expects to obtain more than his estimate of 78,000lb for the current season. According to present appearances, Mr. Walker estimates this season's coffee at 18 to 20 tons, and the pepper crop at about 20 tons. The prospects for 1900-1 are so promising that the directors confidently look for a yield of about 150,000lb made tea, and a coffee crop of about 40 tons, whilst the pepper crop is likely to be quite equal to this season's yield, but, of course, these are only estimates which may be influenced favourably or otherwise, according to the weather. The directors have much pleasure in stating they have now completed arrangements with Messrs. R. and J. Henderson, of 7 Mincing Lane E.C., to finance the company as from April 1 last. These gentlemen have also undertaken to subscribe for the balance of the £8,000 6 per cent. debentures not taken by the shareholders. The directors and Mr. Walker have subscribed for £500 each, and the shareholders are now given the opportunity of securing a good 6 per cent investment with the option of turning their security into 10 per cent preference shares any time prior to the date of repayment of the debentures. The acreage under cultivation remains the same as last year. Dr. Inman retired from the direction during the early part of this year, and according to the articles of association, Mr. J C Sanderson retires from the board, and being eligible, offers himself for re-election.—*H and C Mail*, Oct. 27.

Sugar and our North-Central Districts.—In the note, written in connection with the lecture delivered by Mr. Ferguson in London, the local "Times" has the following comment:—

Sir C. Clementi Smith's suggestion at the debate at the Royal Colonial Institute yesterday that sugar and palmyra should be tried in the North-Central districts is, doubtless, good advice as regards palmyra, but sugar requires a rich soil. The subject of cotton cultivation might also be considered in the near future; and the Agricultural Department may do good work in following the railway line through the Wanni and the rest of the comparative unknown country south of the peninsula.

Nepenthes Distillatoria.—Growers of these plants should include this interesting species in their collection. It was the first species brought to the knowledge of botanists, being found in Ceylon in 1674 by a Swedish physician named Grimm. Dr. Trimen, in his "Flora of Ceylon," says that it grows in large quantities around Colombo, usually in very wet places. He also says the stems are very tough, and are used as ropes. The pitcher is about four and a-half inches in length, one side being flattened between two ciliated ridges. The colour is for the most part green, but is thickly set with small dark-coloured glands. The lid is at first pressed down over the mouth of the pitcher, but later it stands erect. This species is, I think, synonymous with N. Khasiana.—F. T. S.in—*Amateur Gardening*, Oct. 21.

REFORM IN THE TEA TRADE.

(Produce Markets' Review, October 21.)

DOCK CHARGES.

Some time back we printed a short comparison of the charges made by the London Docks and Wharves upon Tea, especially upon Indian Tea as compared with Indian Coffee. We now append a fuller table of the charges on each, calculated so far as possible upon the same basis, and it will be seen that a ton of Tea costs £4 0s 2d, and the same weight of Coffee costs only 17s 2d, or less than a quarter of the charge on Tea.

DOCK AND WHARF CHARGES ON INDIAN TEA IN LONDON.

Charges on one ton of Indian tea landed and sold at public sale, taking 20 chests to a ton :—

	£	s.	d.
Landing and Housing Rate, 1s 6d per chest	1	10	0
Public Sale charges, 4d per chest	0	6	8
Bulking and Taring each chest, 2s per chest	2	0	0
Thirteen weeks' Rent, ½d per chest	0	10	10
	4	7	6
Less 10 per cent ..	0	8	9
	3	18	9
Weight Notes ...	0	0	8
Warrant Stamps ..	0	0	9
	£4	0	2

Note.—The Landing and Housing Rate comprises : Landing, wharfage, housing, separating into chops, weighing, average taring, furnishing lading weights, examining and turning out and in for damage, mending, laying down for private inspection, lotting, nailing down, placing in delivery pile, and delivery by land.

DOCK AND WHARF CHARGES ON COFFEE IN LONDON.

Charges on one ton (16 bags) Indian coffee, for the same period as tea, sold at public sale. There are no charges for arranging coffee for public sale.

	s.	d.
Consolidated Rate, including bulking and sampling, 8½ per cwt ..	14	2
Sorting and Lotting, 1½d per bag ..	1	8
* Seven weeks' Rent, 6d per ton ..	3	6
	19	4
Less 12½ per cent ..	2	5
	16	11
Warrant Stamp ..	0	3
	17	2

If there is no bulking done the consolidated rate is 6d per cwt.

The Consolidated Rate includes : Landing, wharfage, weighing, gross, mending, housing, or piling, accounts of landing weights, original warrants, six weeks' rent free ; weighing on delivery, and delivery.

Lest it should be thought that the comparison with Coffee is of an exceptional nature we have compiled the following table, showing what the charges are for the consolidated rate on other articles of grocery produce, and it will be seen from this how enormous is the surcharge upon Tea :—

CONSOLIDATED RATES PER TON ON VARIOUS GOODS COMPARED.

Indian Tea (placed on about the same basis)	56s
Coffee	14s 2d
Refined Sugar	4s 6d
Currants	7s 6d
Valencias (½-boxes)	12s
Tapioca	8s 6d
Rice	3s 9d
Salmon (in tins)	4s
Sardines	5s 6d

It seems to us impossible to account for the extraordinary difference in the charges upon Tea, except on the supposition that an antiquated system of business has lasted longer than in any other goods, owing to the absence of competition, and of modern methods of trading in Tea. Thirty years ago the wholesale price of Tea in bond, on the average, exceeded 1s 9d per lb., while it is now less than 8d , and, probably, if we went back sixty years the difference would be still more striking. Yet, as compared with the charges of a generation ago, we believe the dock and wharf rates on Tea in London to be, if anything, higher than they were then.

TEA BONDED WAREHOUSES.

It is always said that competition is the lifeblood of business, but if so, the Tea warehouses are in a bad way, for there is no competition whatever between them. A good many years back the system of secret discounts to importers was introduced, which was responsible to a very great extent for the cutting down of the wages, which led to the great Dock Strike of ten years ago. The system of discounts is in itself a most objectionable one, for there can be no object in sending a bill for £100 and on a subsequent occasion returning £10 or £25 out of it, unless it be that the original invoice is intended to be forwarded to some one who is not to receive the discount. After the Dock Strike, the dishonest nature of the system became so apparent, that the Dock Companies felt themselves obliged to publish their discounts in their rate books, so that the Tea growers, when they sent Tea to this market, could have an opportunity of seeing that only the proper prices were charged to them. The publication of the discount, however, was with the condition that it should not be given away, so that beyond the Tea planters knowing that they are charged 10 per cent more than their agents really pay, there is no gain to them in the publication, as is the case with similar pickings in freights and insurance charges.

TEA CLEARING HOUSE.

In order to bring about greater fixity in the charges on Tea a sort of Trade Union was formed, at the time we speak of, between the importers, the warehouse-keepers and the wholesale trade. By this arrangement a Clearing House was established, which somewhat facilitated the daily work of getting Tea through the Customs, and the members agreed, first, that they would only buy Teas lying at specified warehouses, and secondly, the warehouse-keepers agreed that they would only charge certain rates, allowing a discount, first off the importers' charges, and secondly, off the dealers' charges, in both cases on the conditions that these discounts should not be given away. The Board of Customs was also brought upon the

scene, and has since practically refused to fully license new bonded Tea warehouses, so that as a matter of fact, it is practically impossible at the present moment to obtain a new bond for the warehousing of Tea in London.

The result has been unsatisfactory—though at the time well intended, because the object was to protect the minimum wages of the dock labourers. The combination has now clearly become injurious owing to the changed circumstances of the case. The distributor can no longer afford the enormous charges made, and the whole trade, whether importers or wholesale or retail distributors, recognise that the cost of distributing Tea is enormously out of proportion to that of distributing any other article of grocery produce. After carefully considering this question, we can only arrive at the conclusion that this state of things is due simply to tradition, and that simplification and much greater cheapness are possible in dealing with Tea.

CUSTOMS RESTRICTIONS AND SUPPORT OF THE COMBINE.

The first step towards modernising the Tea trade is to obtain greater elasticity in the Customs regulations. In the first place, what reason exists for insisting that the duty on Tea shall only be payable at bonded warehouses? It is obvious that this at once limits the trade to those happy warehouse-keepers who were the parties to the Tea-clearing warehouse scheme. So far as we can judge, there is no reason whatever why the Customs should not gladly welcome the payment of duty on Tea over the ship's side, as is (we are told, but we do not know) the practice with other goods. A covering amount should be paid as the cargo was put over into lighters, and an officer should then attend at the destination of the Tea (at the cost of the owner, of course) and collect the balance, if any be due or return it if the duty be overpaid. To the commercial mind it appears that this would be an obvious gain to the Revenue; but the authorities, on the other hand, appear hitherto to have thought it more advantageous to insist on Tea being warehoused —to take charge of it in detail, and to look after each particular chest for months and years at a time. It is quite clear that until our present restricted Tea warehouse system is broken through, our Indian and Ceylon planters will not have a fair chance in this matter of charges. They should at once bring pressure publicly to bear on the Customs, to insist on sufficient new bonds being granted to ensure free competition in Tea warehousing—at present a highly profitable monopoly.

The *Investors' Review* has lately shown in a series of articles how largely the planters' agents in this country are interested as owners or shareholders in Tea warehouses, and therefore in the maintenance of the present system. The matter will thus be a difficult one to fight, more especially as the wholesale Tea trade have also become interested, through the discount system, in the maintenance of the existing plan. We think, however, they are open to reason on the matter, for their gain from this source is absolutely trivial when compared with the complications and high cost of the system of selling Tea, which are rendering the wholesale Tea trade so difficult.

WEIGHT NOTES AND WARRANTS.

Apart from warehouse charges in themselves, there are many details in the working of the trade which are quite of an exceptional and unnecessary character. There has been no change in the number of packages entered upon a warrant since the time that Tea was three times its present price, and this seems simply absurd. The old system was to have six chests upon a warrant, and the present proportionate document, therefore, should have placed on it eighteen chests or thirty-six half-chests, as representing the former value of a much smaller number of packages. The warrant in Tea is still accompanied by a weight note, a system which has been given up in every important branch of the grocery trade, though it is still kept up in some minor commodities such as spices. The issuing of a weight note, of course, means that the work in connection with Tea is done twice over, for which there can never have been any reason that we can see, but which is, at any rate, a simple waste of time and of money at the present moment. We are aware that the weight note in its present form is considered to be necessary as a security for the deposit paid on the purchase of Tea. We are not, however, aware that any particular sanctity is attached to the deposit system in itself, as it also has been abandoned in the large grocery trades. Supposing it, however, to be continued, security might readily be given by a coupon attached to the warrant. The weight notes are not only unnecessary in themselves, but they embody an immense number of equally futile details. For instance, they give full import particulars in excessive detail, either in writing or printing, which also appear on the warrants. In addition to this, the weight note is supposed to bear three separate signatures, and often does so, and it then forms a separate contract for the sale and purchase of each six chests, being signed by all the parties. In addition to this, each weight note works out, in detail, for every six chests of Tea, the weight and price at so much per pound. From this result the deposit is deducted separately, and the lot money, 4d, is then separately added to the total. The weight notes give the particulars of the country of origin of the Tea, the name of the importer, the date of importation, the variety of Tea, the name of the ship, the name of the captain, the port of origin, the name of the selling broker, the date of sale, to whom the warrant is issued, the date of the prompt and of the commencement of rent. Several of these particulars are repeated twice over upon this valuable document —the weight note—though they all appear on the warrant also. What could be more childish and absurd than all this? There is no doubt that a very considerable economy in money may be effected by enlarging the number of packages on the warrant and by abolishing the weight note altogether. This is a simplification which forms, in our opinion, the initial step towards the cheapening of the distribution of Tea. To those accustomed to modern systems of trading, the weight note appears simply a farcical, though unfortunately a costly, absurdity. If the Coffee trade can be conducted with the utmost ease without such documents, why cannot the same be done with Tea?

DELIVERY ORDERS FOR CLEARING.

Further great simplification might be caused by using delivery orders for clearing and delivering tea, as is done in other trades. There is, however, a considerable practical difficulty in this matter in the case of tea. Many years ago Mr. Gladstone, as Chancellor of the Exchequer, in one of his great Budgets freeing trade from Customs imports, unfortunately made a detailed change which was worked a great

deal of mischief, by imposing a penny stamp on delivery orders for goods issued on warehouses where rent is taken. Tea at that time was delivered in great detail to the retail buyers, who kept stock in bond in London, often for long periods, in the charge of the wholesale dealers. This system still continues, and the quantities in which tea is cleared are proportionately smaller than is the case with other articles of grocery produce. Representations were made to Mr. Gladstone as to the injurious bearing of the penny stamp on delivery orders in the case of tea, and it was agreed that the warrant stamp of 3d should, as a compromise, cover all deliveries made on the face of that document. It has been argued over and over again at the Board of Inland Revenue, that the stamp having been paid on the warrant as a compromise for separate deliveries, a penny stamp should not be required when separate pieces of paper are used for delivery orders, instead of the deliveries being written off on the warrants themselves. The authorities at Somerset House, however, held a different opinion, and it has not been considered worth while to go to law to test their right to make the charge though it appears to be very doubtful. The result of this is the maintenance of an extremely complicated system in the clearing of tea. The warrant, with the order to deliver written upon it, has to be lodged at the Clearing House, from whence it is sent on to the wharf, and subsequent to the delivery of the tea, the warrant is returned to the Clearing House, from whence, in due course, the wholesale dealer fetches it back. The delays and expense caused by this little obstacle to business, devised by the perverse ingenuity of our Revenue departments, are inconceivable to those who have been accustomed to the broader, easier, and far cheaper system used with all other grocery goods. If it were not for this stupid piece of obstruction on the part of our Government to a rational system of delivery, there would be no necessity whatever for such an institution as the Clearing House, and the home trade would not only move as smoothly again but be conducted at much less cost.

DELAYS IN GETTING WARRANTS.

The warrants and weight notes are not only obsolete and obstructive in themselves, but there is a quite objectless delay in obtaining them. In all other trades that we know of payments for warrants as they are required are made to the actual holders of the documents. A notice is sent them in the morning that such-and-such warrants are required. They are at once sent on by hand to the applicant, and handed over in exchange for a cheque. In Tea, this is not the case, and endless loss of time and temper results. The importers should do one of two things: either trust their brokers with their warrants if they cannot manage the details themselves, or else accept direct payments. Their can be no doubt that the second is the proper plan to adopt, and it is surprising that the wholesale Tea trade have not long since insisted on the removal of this great hindrance to business. It is true that a poor compromise was adopted some years back, by which it was arranged, that when payments were made to the brokers before noon, the brokers would procure the warrants from the merchants by 2 p.m. This plan constantly leads to a day being lost in the delivery of Tea, to the loss of both the wholesale and the retail buyers. We, are, of course, fully aware that one cause of these delays, is the fact that such a large proportion of warrants are pawned by their holders. When they are their own property there is no objection to this than to any other legitimate pawnbroking operation. But when the pawners are not the owners of the goods other considerations arise, and after the sale of Tea, the original owners have no right to leave it in pawn than they have to mortgage some one else's house.

THE PUBLIC SALE SYSTEM.

The system of disposing of Tea almost exclusively by public sale lends itself to much criticism. It will be seen above that the cost of arranging Teas for public sale is no less than 4d per chest, so far as the docks and wharves are concerned. For the work done, the charge is not out of the way, but the question is whether the whole system might not be greatly simplified and more closely approximated to other cognate trades. First, there is the payment to the brokers for the hire of rooms, and for the printing of the catalogues, and for their distribution, often to a very unnecessary extent. Tea catalogues are printed in a different way to those current with other groceries. We do not know whether the system of printing and the sort of paper is more or less costly, but this deserves looking into. There is one very obvious source of waste in Tea catalogues, which are often very small documents, but in which two pages are always given, first for the names of the brokers and rough particulars, and next for the conditions of sale, which are given in full in every catalogue. These particulars it is surely unnecessary to print in every catalogue in detail, especially when, as they often do, they take up from 20 to 50 per cent of the paper used. The catalogues are not, it is true, in such minute detail as was the case years ago, but it is questionable whether this does not still admit of a great deal of simplification.

The brokers' charge for public sales, in addition to their brokerage, is 9d per lot of six chests. It would be interesting to compare this with the public sale charges on other Mincing Lane produce, and the materials could easily be collected. On 2,000,000 chests a year sold publicly, 9d for six chests represents a cost of £11,000.

A great deal of the work connected with catalogues is due to the separation of the teas into miserable little lots, which are supposed to be of different qualities, though the teas are very frequently all plucked at the same time, from the same bushes, and on the same gardens. Owing to the inefficient appliances in India, Indian teas have, as a rule, to be rebulked in London, and while this operation is being conducted, we feel sure it would be in the interests of every one concerned—planters, importers, and dealers alike—to put an end to these separations, and to make larger breaks for one average sort of tea. The cost to the wholesale trade of distributing these trifling lots is out of all proportion to the profit to be obtained upon them. Probably the old days when China teas reached us in breaks of 300 to 600 chests, which could be judged of by a single small sample, will never return, but the Indian tea trade will never be in a satisfactory condition until a minimum parcel of one quality should be represented by quite 100 chests. This cannot be done till teas are bulked at the gardens, and so tared that each chest does not require to be turned out here for separate taring, at an enormous cost to

the grower, which only entails unnecessary labour on the home trade, with no advantage in return.

HUGGER-MUGGER AUCTIONS.

The system of sampling the public sales on the part of the trade is a very cumbrous one. In other business the samples are on show in the broker's sale rooms, but that is mostly in the case of commodities where elaborate tasting is not so essential as it is in the case of tea. It has been suggested that it would be more convenient if the public sale samples were sent round to the trade in time for the sales, by the bonded warehouse-keepers and payment taken for them at some average price, or so many pounds of "returns" given. At present the whole number of the representatives of the wholesale dealers attend at the different bonded warehouses, and the supply of the separate samples to them creates an immense amount of expense and of waste of time. We do not suggest this as a definite solution but only as one that might be considered, now that the new Tea Buyers' Association is engaged in going into all such questions. As it is, the time allowed the trade for valuing is quite insufficient, and only the largest houses can cope with the samples, and then only hurriedly. The interests of growers must often be seriously affected by this excessive haste.

As we pointed out some time back it appears certain that much of the present great depreciation in the value of tea, as compared with former years, is due to the system of unrestricted public sales. Whether the teas are or are not wanted, they are pushed upon the market in constantly increasing quantities, and fall to a dead level in price in consequence, because it is not worth while for anyone in this country to stock more tea than they can possibly help. It is our firm conviction that what the Indian tea planters have been long trying to do, that is abolishing what they erroneously call the Mincing Lane monopoly, is the source of half their troubles. In former days when the varieties and qualities of tea were far less than they are now, it was worth the while of an intermediate class, acting as merchants here, to buy up suitable teas, and to wait for markets, so that the prices were equalised. At present this class of dealers practically confine themselves to hand-to-mouth purchases, for they can always get plenty of supplies at auction, and there is no reward whatever for holding larger stocks than are sufficient for a few days' trade. So far as we know, there is no other article whatever, which taste and fancy so largely enter into, which is sacrificed in the same way as Tea is, in this hugger-mugger without reserve system. In years past we have strongly advocated public sales for Tea, as the only way to fix values, and to this we fully adhere, if they are supplemented by large private transactions, conducted in a more leisurely way. The Indian and Ceylon trade can never be on a satisfactory basis until the public sale system is largely supplemented in this fashion.

BULKING AND TRADING IN INDIA.

We alluded above to the great cost inflicted upon the Indian planters, through the necessity for bulking and for separately taring their Teas in this country. Some progress has been made with regard to bulking abroad, but it is inconceivable here why the system has not become universal. Years ago we heard the old excuse about the dampness of the climate and the difficulty of keeping Teas; but if the facts are as alleged, the difficulty can easily be remedied by such simple appliances as hot-water pipes. Then again, as regards the taring of the teas, the smaller gardens no doubt have to rely on rough native labour, and this is given as an excuse for the chests not being cut to scale. The excuse seems to us totally insufficient, and we can only ascribe the continuance of the existing system to ignorance. In these days when metal chests can so easily be obtained, as well as the beautifully-made "Venesta" and other artificial wood chests, uneven tares seem simply inexcusable. It pays our Sugar refiners to import ready-cut wood for such a cheap commodity as theirs, and when a single manufacturer requires 40,000 or 50,000 cases a week of the size of a tea chest, it surely would be worth the while of Indian planters to import either the "Venesta" packages or wood cut in proper shooks from other countries, in places where the native labour and the appliances are so deficient as they appear to be in a vast number of cases. The planters also go far to necessitate rebulking in this country by the excessive subdivision of their teas into different sized leaves. This can only be effected by a costly system of sifting, in addition to the exposure of the tea to friction, which breaks a large portion of the leaves, and turns them into comparatively waste dust or broken leaf. We have long held that the planters would do far better to buy a reasonable-sized grocers' bulking and cutting machine, and then make much larger breaks of an average quality. The cost would be less, and, we believe in the long run, the relative price would be higher.

INCREASING PRODUCTION, LOWER PRICES, AND THE ARTIFICIAL RUPEE.

The production in India, Ceylon and Java, is consequently increasing, for the fresh plantings are year by year coming into bearing. Even if another tea plant were not planted for the next five years, the increase would still continue from previous sowings. The consumption of tea in this country has reached its limit, and the next great consuming country—the United States—uses only something like one-sixth of what we use, and is at present greatly wedded to the flavoury China teas. The same is the case in Russia, and although we hope, and believe, that Indian and Ceylon teas will readily make their way in both these countries, the demand cannot be important for years; its progress is not quick, and the increasing supplies must therefore continue to deluge this market. The action of the Indian Government in artificially fixing the exchange value of the rupee at the rate of 1s 4d, when the intrinsic value of the coin is something about 11d, is also most injurious to the Indian tea planters. In these depressing times it must to a large extent tend to ruin our own growers, or to divert the trade to the common tea of China, because China owing to the unrestricted exchange for the dollar, enjoys an advantage of 2d in every pound of tea. While the possibilities of economies in the trade are great, we fear that the possibilities of decreasing prices are even greater, so that the question should be actively taken in hand. It is, therefore, obviously to the interest of the whole trade to take up tea reform in earnest. It is possible that the result of the coming depression will be the extension of something like the Central Factory system. If so, the small gardens would cease to manufacture tea, and would sell the green leaf to the larger operators, who can work better and more economically than the small growers. This is the system which long usage has established in China, and it is already beginning in India. These latter

changes, however, are matters for the future, and the present necessity is for a simplification and modernisation of the tea trade, such as will greatly reduce the present unnecessarily high cost of distribution.

CONCLUSION.

In the above remarks we have given a short outline of the main changes required whether at home or abroad, for it matters little which section of the trade is benefited so long as expenses can be lessened. The necessity for reform must come home very forcibly to the producer, in consequence of the present great depression in values. It is true that, for temporary reasons, very common teas have recently very considerably advanced, but we do not think that this can possibly last for long with the supplies coming forward. If it do so, and the price of common Indian tea is maintained, we shall shortly be swamped with common China Congou, which will bring prices once more down to a lower level. If there is no hope for a rise in the price of tea, but rather a strong prospect of a further fall in it, the only way to save the planters from ruin is economy in production and distribution. The mixture of the two branches of the trade in the above remarks is apparent and not real, for we hold that the whole tea trade is organised far too expensively, for the present scale of prices, and that economies in cost in any direction will benefit all sections alike.

WILD AND PLANTATION CINNAMON FOR EXPORT.

The following circular has been issued by the Customs:—

H. M. Customs, Colombo, 9th November, 1899.

It having been brought to notice that wild cinnamon has been entered for export as cinnamon, it is hereby notified that from this date the description "Cinnamon" will not be admitted at the Customs and Exporters must declare the bark as being either "Plantation Cinnamon" or "Wild Cinnamon."

The attention of Ships' Agents is requested to the rule that the description of goods in the "Outward Contents" must correspond with the description in the boat notes.

H. L. Moysey, Principal Collector.

The Steamer Agents, Colombo.

SNAKES FOR THE PARIS EXHIBITION.

The Portuguese barque "Atlantico," from Para to Brazil, has reached New Orleans with a cargo consisting entirely of snakes, valued at fifty thousand dollars. They were gathered along the Amazon River, and include Boa constrictors thirty-three feel long. They will be shown at the Paris Exposition. French snake-charmers own the collection, which represents the labour of twenty-five years spent in gathering the rarest specimens from America, Asia, and Africa.—*East African and Uganda Mail*, Oct. 20.

THE MINERALS OF CEYLON.

Mr. Archibald K. Brown, a mining expert of considerable experience and influence, who is at present on a visit to Ceylon is anxious to obtain a concession from Government and if it is granted to him he points out that it will cost the Government nothing, as he is willing to bear the whole cost of prospecting operations throughout the island. From a contemporary we learn that Mr. Brown has already been to the Colombo Museum where he was favourably impressed with a good many specimens of the stones and ore he saw there, and he has interviewed some of our local experts. He was a little surprised that so little was known in Ceylon about its mineral capabilities.

MORE LIGHT ON THE TEA QUESTION.

We have already referred more than once to the complaint made by cyclists and others as to the difficulty frequently experienced in getting tea served at country inns. A correspondent now comes forward with what he claims to be an explanation of the reluctance of inkeepers to supply anything except beer and other alcoholic liquors. He says it all comes of the tied-house system. Many a publican has tried to improve the character of his trade by selling something else than intoxicating drinks, and as surely as he succeeds the sale of beer falls off. Then comes the brewer's agent, who reminds the publican he is there to sell beer, and that if he allows the brewer's interest to suffer, someone else will be found to do the work better. Many a publican is said to have been turned out of his house for this reason, and this correspondent declares that it is because the publican is afraid to supply it that people find it so difficult to get a cup of tea in a tied public house.—*Home & Colonial Mail*, Oct. 27.

PLANTERS' MEETING IN CENTRAL AFRICA.

(*Central African Times*, Sept. 30.)

In response to several requests an informal meeting of the Chamber of Agriculture and Commerce was called for Monday afternoon, 18th September, to meet the Mlanje planters who had come in for the Agri-Horticultural Show.

The Chairman in his opening remarks explained the object of the meeting and stated that it was a quite informal and not a regular meeting of the Chamber. It had been suggested that a meeting between the Mlanje men and the Chamber would lead to good results as there were many questions of common interest which were ripe for discussion.

Mr. Bradshaw then referred to the name of the association and stated that he was in favour of a Planters' Association such as they had in Ceylon and India. He did not doubt that the Chamber had done good work in the past, but he thought it would be much better for the country if it were a Planters' Association. At present there was a certain confusion of interests, whereas planters as a body would be more able to do good work for the industry. If a purely Planters' Association were formed he would be one of the first to support it for all it was worth, but he did not see his way to support the Chamber on its present footing.

The matter was then discussed by those present. Mr. Moir said he agreed pretty much with all that Mr. Bradshaw had said. He recognised the good work which had been done by the Chamber and he thought it had fully justified its existence. At the same time if it were thought that it would better fulfil its functions as a Planting Association he was also quite willing to go n with the proposal.

Mr. Israel agreed with the proposal to change the name and thought that it would be better to have two separate Chambers, one for the trading interest and one for the planting interest.

Mr. Moir then referred to the new Mining regulations and pointed out how they would affect certain titles. The position of such titles was not clear and he suggested that the Chamber Committee should go into the matter and make it clear otherwise it might seriously affect the titles of many holders of land.

The Chairman pointed out the danger to the growing tobacco industry in B. C. A. by the proposal of the Rhodesian Legislative Council to tax tobaccos.

Several other matters, such as Labour going south and the need of the natives being made to work for their taxes, or the tax being raised were referred to, and after an interchange of views on these and other questions the meeting terminated.

COCHIN MARKET.

Cochin, Nov. 11th.

C. N. Oil.—As anticipated in our last this staple has made a slight advance, and the closing quotaions today are R88·12 to R89 per candy. A large quantity of oil is booked for New York by one of the steamers of the Indian-American line due next month. The market in London is also firm and Cochin oil is quoted at £29 10s 0d. for spot and £26 10s 0d. for January-March shipments c. i. f. per ton.

Coir Yarn.—By the English mail of 20th ultimo particulars of a public coir sale held in London on that date were received. The quantity of Cochin yarn brought forward was only 212 bales and two ton in dholls and the prices realised were decidedly in seller's favour. Locally supplies arriving from the interior continue to meet with a good demand, but prices shew no change.

Rope Yarn.—Contracts are reported at higher rates and the market is firmer. We quote today assorted R36·46 per candy baled weight.

Coir Rope.—Extreme prices were realized for the small quantity of Cochin rope offered at the last sale owing to limited stock. Early shipments from this side will most probably shew very favourable result. We quote here today R8 to R8·8 per cwt.

Coir Fibre.—Picked R19·20 per bale of 200 lb.—*Cochin Argus*, Nov. 11.

RUBBER CULTIVATION IN CEYLON.

M. Fernand Vivier has arrived in Colombo by the M.M. ss. "Tonkin" from Singapore, and is proceeding home by the ss. "Polynesien." He is interested greatly in the process of extracting rubber from young stems, and of preparing it by a purely mechanical process the bark of young trees. He (with his partner, M. Emile Deiss,) is dealing with a new process and has taken bark (specimens of which can be seen at the *Observer* Office) from the *Willoughbeia firma*. M. Vivier is now on his way to Paris, but will return to Ceylon in January, when he hopes to be able to meet planters and merchants interested in rubber cultivation in Ceylon with the view of introducing the new process which, he claims, will add materially to the pecuniary advantages to be derived by those concerned in the cultivation of rubber trees.

MINOR PRODUCTS REPORT.

Cardamoms.—The moderate supply in auction today met a poor demand, and a small proportion found buyers at about 2d per lb lower rates. The following were the prices paid:—Ceylon-Mysores, good bold pale, 3s 8d to 3s 9d; medium ditto, 3s 2d to 3s 5d; small to medium, 2s 5d to 2s 10d; small pale, 2s 3d to 2s 4d; very small pale, 1s 10d to 1s 11d; shelly and split, 1s 8d; seeds, 1s 8d to 2s; wild Ceylon, 10d; Ceylon-Malabars were not in demand.

Cinchona.—The average percentage of sulphate of quinine in the bark to be offered at Amsterdam on November 2nd, is 5·32 per cent against 5·25 per cent in the September auctions, 5·60 per cent. August, and 5·2d per cent for the ten auctions of 1898. The 6,141 packages to be offered contain 561,330 kilos of Java bark, with a total of 26,850 kilos (939,750) oz. The only offering in auction was a parcel of six bales red bark, dull broken quil, for which 4½d was refused.—(From the *Chemist and Druggist*, Oct. 28).

CEYLON TEA.

THE NEW TARING ORDER:

HALF-POUND AND MORE TARERS TO BE USED.

London, Nov. 15 (received 12 p.m.).

The Customs have decided to issue an order for Taring teas with an added half-pound weight in the scale: and increasing the number of tarers taking for averaging. The order takes effect from the 1st December.

"CORN" RUBBER.

From a French paper of date in October, we make a translation of what seems to be the latest information respecting "corn" rubber. In view of the great demand for the article, few products are more adulterated in various processes of manufacture than rubber; and here we have one of the processes by which it is hoped to get a substitute:—

For some years a kind of rubber has been made from Indian corn (*maïs*); now it is corn which will soon give the precious substance. Corn-rubber looks remarkably like the ordinary reddish-brown rubber, but it has not yet been found out how to make it as resistant to heat as its predecessor. Corn-oil, which is the first constituent of this false rubber, is not readily oxidized; and, without knowing whether this is a fault or a good quality, they say that, thanks to this peculiarity, the new product will always preserve its suppleness and will not crack. The public has not yet been able to judge, as this rubber has not reached the trade; chemists wish to continue their researches until success is assured. The corn-oil is taken from the germ of the grain and not from its cover. The starchy and glutinous parts of the seed served in the manufacture of starch or of glucose while the oil of the corn was practically useless.

Hence it is thought that the new rubber could be put on the market at 33 centimes (3d.) per lb. Already it can take the place of rubber in cycle tyres or linoleum or for cheap toys; but will not do for scientific or industrial apparatus.

It was started in Chicago and will probably make its *début* at the Paris Exhibition.

In another Paris paper, there is the following reference to gutta-percha of some local interest:—

THE CULTIVATION OF THE EUCOMIA.

M. Dybowski, Director of the Garden for the Colonies, has given the Academy of Science an interesting note on the possibility of obtaining a very superior gutta-percha from a shrub native of the North of China, called *Eucomia*. Hitherto the production of this article (which fetches often 12s. the lb.) has been confined to the islands of Sunda. The *Eucomia* can be grown in very temperate climates. The gutta extracted from the fruits is of very good quality, and the fruits contain 28 per cent of gutta. The leaves and branches also contain it and can be utilized.

THE CAROLINA TEA COMPANY OF CEYLON.

SEVENTH ANNUAL REPORT.

The following has been published as the annual report:—

Your Directors beg to submit the Balance Sheet and Profit and Loss Account for the year ending 30th June, 1899.

The surplus of £8,236 11s 8d it is proposed to appropriate as follows:—

Nett Profit ..	£8,236 11 8	
Amount at Credit of Ordinary Shares ..	112 18 1	
		£8,349 9 0
Debenture Interest ..	£2,450 0 0	
Dividend on Ordinary Shares at 7 per cent per annum ..	3,500 0 0	
Proposed to place to Reserve Fund ...	1,200 0 0	
		£7,150 0 0
Balance carried forward to the credit of the Ordinary Shares ..		£1,199 9 9

The actual tea crop from the Company's properties was 961,757 lb. as against an out-turn for the previous year of 939,491 lb., in addition to which 32,862 lb. tea were made from purchased leaf.

The cost of the tea free on board Colombo, was 4·61d per lb., as against 5·10d for the previous season.

The average gross sale price in London was 7·65d as against 8·02d in 1897-1898.

The fall in price as compared with last year was to some extent owing to the disorganization of business brought about by the dispute between buyers and importers on the subject of the condition of Auction Sales. This has now been arranged, but importers of teas generally have suffered in the matter.

The crop of cocoa has increased from 441 cwt. to 555 cwt.

The season's working of the estates shows a very substantial increase in profits over those of the previous two years, notwithstanding that the average sale price of the teas has declined, proportionately with the drop in values of Ceylon teas generally, and in the face of a continuously advancing average rate of exchange. This result has been obtained by means of increased crops, as also by large economies effected in expenditure on the estates and in Colombo.

Your Directors are pleased to add that these economies have been arrived at without at all interfering with the continued thoroughly satisfactory condition of the properties.

The following statement will be of interest as showing the progress of the estates:—

Season.	Tea in full and partial bearing.	Actual Crop from Company's estates.	Cost per lb.	Average Sale price. Gross.
	Acres.	lb.	d.	d.
1895 ..	1,987	916,715	4·43	8·35
1896 ..	2,046	930,066	4·88	8·26
1897 ..	2,116	939,491	5·10	8·02
1898 ..	2,233	961,757	4·61	7·65

The total area of land now under cultivation is 2,602 acres, comprising:—

Tea in full bearing ..	1,784 acres	
Tea in partial bearing...	449 ,,	
Tea not in bearing ..	208 ,,	
		2,441 acres
Cocoa, Coffee, &c		161 ,,
		2,602 acres

The sum of £1,200 has been added again to the Reserve Fund, bringing up the total of this account to £8,400.

Your Directors have resolved to carry forward a large sum this season, having under discussion at present representations from the General Manager in Ceylon that considerable additions be made to accommodation and machinery at the principal Factory of the Company, to provide for the proper manufacture of the constantly increasing crops of tea.

Your Directors have to express their entire satisfaction with the working of the staff in the Company's employ.

The thanks of the Company are due to the Colombo agents for a modification in their scale of charges to the advantage of the Company's which has been accepted by the Directors.

It is with great regret that the Directors have to report the resignation, owing to failing health, by General Hopkinson, C.S.I., of his seat on the Board. It is not proposed in the meantime to fill up this vacancy.

The Directors retiring by rotation are Mr. C A W Cameron and Mr Evelyn Heseltine, who being eligible, offer themselves for re-election.

C. A. W. CAMERON, Chairman.

London, 18th October.

MESSRS. SCHIMMEL & CO., OF LEIPSIC AND NEW YORK.

THEIR ASSOCIATION WITH CEYLON.

We have received by the German mail a report from the above firm, which opens with the remark that: "the progress of all branches in the German Empire, continues unabated;" reference is made to the operations of the Company in the United States, Brazil, Mexico and South America, as well as Europe: and they add:—

We would further mention that, taking into account the importance of the English market, we have opened, from the 1st of October, a branch office at 27, Mincing Lane, London, E.C., under the management of Mr. H. Breitenstein, late manager to Messrs. Volkart Bros. of Galle, Ceylon. This branch will be exclusively devoted to the sale of the products of our Leipzig and New York works and to the general furtherance of our interests in Great-Britain.

With regard to cardamom oil, the following particulars are given:—

E. J. Parry contributes a paper on the oil of Malabar-cardamoms. The author has prepared and examined the oil obtained from two different varieties, known respectively as Ceylon-Malabar and Ceylon-Mysore-cardamoms, and has found them identical in point of odour. Their physical properties, also, were almost the same.

CINNAMON.

This occurs in the course of the report:—

The quotations of cinnamon chips have, during the last few months, gradually risen in Ceylon to 3½d. per lb., and the exports are nearly double those of the corresponding period of 1898. This would imply, either that active speculations are carried on, or that new openings have been found for this article.

The exports of chips were:—

	Jan. to	July		lb.,	
from 1st		25th	1899:	1,159,761	as against
,, 1st	,,	25th	,, 1898:	677,656 ,,	
,, 1st	,,	25th	,, 1897:	666,454 ,,	
,, 1st	,,	25th	,, 1896:	450,348 ,,	

This increase seems to have been at the cost of a reduction in the exports of quills, which, in the above named period, fell from 1,123,653 lb. in 1898 to 886,132 lb. in 1899.

The shipments of chips were distributed as follows:—

To United Kingdom 444,349 lb.; to Germany 349,096 lb.; to United States 28,000 lb.; to Austria 105,926 lb.; to Italy 100,320 lb.; to Belgium 95,760 lb.; to France 1,750 lb.; to Holland —; to Spain 18,200 lb.; to Australia 15,120 lb.; to Turkey —; to Africa 1,240 lb.; Total: 1,159,761 lb.

According to these figures, Germany now occupies the second place. The bulk of the German imports, of which a full third comes to our firm alone, would appear to serve for the preparation of Ceylon cinnamon oil.

CITRONELLA OIL.

Since our last Report, the value of this important article has slowly declined by a further 10 per cent, and has now reached the lowest point within our knowledge.

The new variety of citronella oil, which we have recently introduced, is being distilled in Java exclusively for us. Its cost is almost twice that of Ceylon oil, but the last-named cannot be compared with it, and, in respect to strength and sweetness of aroma, it throws all other varieties into the shade. As a result, this oil has found so many buyers, that there can be no question of the accumulation of considerable stocks.

CHINA AND JAPAN TEAS.

EXPORT OF TEA FROM CHINA TO UNITED KINGDOM AND CONTINENT.

	1899-1900. lb.	1898-99. lb.
Hankow and Shanghai ...	9,544,030	10,608,322
Amoy	221,484	390,250
Foochow	13,095,083	11,408,050
Canton	4,042,645	3,770,406
	26,903,242	26,177,028

EXPORT OF TEA FROM CHINA TO UNITED STATES AND CANADA.

	1899-1900. lb.	1898-99. lb.
Shanghai	1,222,849	1,132,577
Amoy	8,339,928	7,253,022
Foochow	5,630,617	5,876,852
	15,193,394	14,262,451

EXPORT OF TEA FROM CHINA TO ODESSA.

	1899-1900. lb.	1898-99. lb.
Shanghai and Hankow ...	25,363,948	22,676,900

EXPORT OF TEA FROM JAPAN TO UNITED STATES AND CANADA.

	1899-1900. lb.	1898-99. lb.
Yokohama	22,212,276	21,084,786
Kobe	11,782,517	11,235,261
	33,994,793	32,320,047

—*China Overland Trade Report*, Nov. 4.

RUBBER AND PLANTING IN BRITISH CENTRAL AFRICA

Mlanje, Oct. 21st.

THE CULTIVATION OF RUBBER

would seem to deserve the serious attention of the capitalists, for there appears to be no limit to the demand and increasing uses to which this product can be put; and in the course of years, not very many I should say, the present supply must become very limited. I have read with much interest the articles appearing in your *Tropical Agriculturist* from time to time on this subject. I shall now venture with a few remarks on the subject myself.

Central Africa, from what I know of it, and what I have read, does not furnish a vast or unlimited supply of rubber vines or trees. The whole country from north to south, and from east to west, is a bush-grass field, as one may call it, covered with native grasses with single fire-proof trees standing in it from 10, 20 to 30 yards apart and on many places thinner; and the bulk of the country has no trees at all. The forests are few (very limited in extent) and usually only in gullies and strips on the sides of the higher ranges of mountains. Stanley's dark forest, of course, is an exceptionally large piece of the continent.

Now the bush country contains no rubber-yielding vines or trees except by the sides of some streams which have a small bulk of trees left by natives to conserve water, so it is not difficult to see that the supply of

RUBBER FROM AFRICA CANNOT LAST

especially owing to the wasteful way in which it is collected.

There are only two vines in British Central Africa from which rubber is collected by natives, viz:—Landolphia Florida and Landolphia Pertersiana, very small delicate vines, only to be found in *forest* which the bush fires don't run through. Traders are offering 1s to 1s 6d per lb. for this rubber and engage squads of men to search every nook and corner for it, regardless of the method of collecting.

The Negro finds a vine or two, climbs the trees to which they are attached, cuts the vine in sections, even the very primary roots he cuts, and carries away the whole thing to the nearest path, or his camp, where he slices away at the bark just as he fancies, till he get a small ball of a few ounces (the rubber coagulates as fast as exposed, and is gathered at once) and off he goes in search of more. The primary roots being cut, and the root bulb removed, the vine is done for, as no shoots ever spring from the roots left in the ground. Some useless and, it would appear to me,

UNWORKABLE RUBBER REGULATIONS

have just been published by H. M. Commissioner for B. C. A. What is wanted is to restrict the collecting of rubber altogether, except by license under proper supervision: even then I question very much whether the Congo Free State, B. C. A., and the South African Co. will permit the destruction and ultimate extinction of the "goose that lays the golden egg" in their territory.

I do not think many years are wanted to exhaust the rubber supply of East, Central, and West Africa, though West Coast exports have fallen off greatly during the past few years. We have several large forest trees here, which yield rubber, and one large vine that is not tapped by natives as the caoutchouc does not readily coagulate.

One of those trees answers to the description of Kickxia Africana, a West African rubber tree; another I take to be Ficus Elastica. The yield of the latter would seem to be very large. I set two men to work on a large tree in my forest; and in about eight hours they brought in over 1 lb. of rubber each in the

evening. It took the whole day to coagulate. The men cut slits out of the bark, which is very thick, and allowed the rubber to collect and set in them. I have sent rubber and herbarium to Kew for identification.

The vine rubber, &c., I have also sent to Kew. I was always struck with the enormous amount of caoutchouc this vine yields : it simply runs out of a cut in the bark for any length of time, and I was

LED TO EXPERIMENT

with some from what I read in your *T. A.* I went to the forest with two men and from one vine, in the course of a few hours, we returned with two quarts of caoutchouc. Into one quart, I stirred half a tumbler of water, in which one tea-spoonful of J. T. Morton's tartaric acid was dissolved. After a little stirring, the contents coagulated the same as butter would come in a churn. I then went to the bath-room and washed the rubber, squeezing it and working it in my hand for some time, till all the refuse was washed out, when I had a piece of beautifully *pure* rubber quite white. When exposed it turned reddish grey in colour. The other quart I boiled pure and simple without the addition of any acids. In a quarter of an hour, stirring all the time, I got the same result. Gradually the rubber stuck to the stick until all was collected. This seemed to take place gradually as the water evaporated until I had one lump like very thick porridge, which I tumbled out on a board, poured water on it, and worked it about till I had

A LOVELY PIECE OF RUBBER

much nicer looking than what was made with the acid—more elastic with a pretty bluish transparent look about it. I am sure the above treatment is simple and inexpensive enough, and perhaps better results may be got than by the use of patent machinery. I shall try the churning; but as the use of my dairy churn is prohibited, I shall have to construct one for myself. I shall let you know the result in due course.

The abovementioned vine is very hardy, easily propagated from seed, and only takes about ten years to become fit for tapping, with a stem a foot in diameter. I am thinking of

PLANTING IT ALONGSIDE ALL THE SHADE TREES

in a coffee clearing on which native shade was left, although the coffee is a decided success so far up to 18 months old. I do not think the rubber vines would do any harm; and, of course, it is always better to have two strings to one's bow.

I have frequently read in the columns of your *Tropical Agriculturist* about hybrid coffee. Why, it is as common as anything here. From

SOME ORANGE COFFEE

imported by the Church of Scotland Mission by Gardener or some other person, we have got it hybridised on, I suppose, every estate in British Central Africa. At all events Mlanji has got it in every shade from the real orange to nearly approaching the dark green of our Coffee Arabica. I have often wondered whether this variety would resist the attack of leaf-disease. I could send some seed to any one in Ceylon who may wish to try it. From a small-leafed West African coffee we have several hybrids. The narrow-leafed coffee that my P.D. in Dimbula used to point out as a mail coffee, and give orders to reject when counting the plants, is also here, and has got hybridised with the Arabian variety.

I got some Liberian coffee seed from the Blantyre Mission in 1892 and put it into a nursery, and remember a few of the seeds came up; but what became of the plants I never found out from my assistant who did not know much about coffee. After some years I discovered several of the Maragogipe or hybrid variety of coffee trees in a field of about 140 acres; but how they came there I do not know, for I never got any seed or plants of Maragogipe from anywhere, and can only surmise that a Liberian plant must have existed somewhere and got

HYBRIDIZED WITH THE ARABICA.

I have not had much experience of tea-making. In the early days of hand work, I got some lessons from the late A. Cameron when on his rounds and turned out fairly good tea, which sold at 50 cts. per lb. in Colombo. But what puzzles me here is, I sometimes make a break of tea which is quite better; and if any of your experienced planters or your worthy self would tell me what is the cause of better tea I would be much obliged. I see nothing in T. C. Owen's book about it, and never remember turning out better tea in Ceylon. I have an idea that it is the withering or fermenting that has to do with the bitterness as it is only occasionally it turns out better. The crop is just cver in British Central Africa and said to be a large one, and it would need to be, for the past two years have been very short.

THE RAINS

have been seasonable this year and our coffee is blossoming early: we have a grand show of spike on the trees at present. Early blossoms always do well in British Central Africa, so that I may safely say prospects are good for 1900 crop. H. B.

ANALYSIS OF A COCONUT.—Dr. Bachofen, of Mr. Baur's Laboratory, has produced an analysis which should be of much interest to coconut-growers. The chemical constituents are most precisely detailed, while the amount of each important ingredient in the soil, removed by 1,000 nuts, is also added for reference. The latter should be extremely useful in the analysis of soils under consideration with a view to coconut-planting. In the former the most noticeable points are that Potash and Sodium Chloride are the chief constituents of every portion of the coconut; and that the dry matter exceeds the moisture only in the Shell, (by 69·60 per cent) while it is less in the Husk and Kernel by 31·12 and 5·6 per cent respectively.

OUR PLUMBAGO INDUSTRY.

Crowboro', Oct. 27.

A merchant largely interested in our one mineral of commercial importance, although he knows nothing of Ceylon, has been placing some enquiries before me as follows :—

"Plumbago, which a couple of years ago, could be bought at £25 a ton is now up at £75 per ton, a corresponding increase having taken place in the inferior qualities. To what is this owing? Are the mines exclusively in native hands or are they subject to any control from European or American buyers? Are the different qualities of plumbago taken from different mines? Does the working of a mine require much capital? I am told that the principal expenses is timbering. What is the present output? And is the supply likely to run short? Perhaps you can say what probability there is of the present abnormal prices being maintained. Could a large consumer depend upon receiving a regular supply all the year round? At present it seems to be very scarce as well as dear."

My answer was that he (my correspondent) as using plumbago, ought really to know more about the cause of the rise in price than I, a Ceylon man. That, we have heard, is the greatly multiplied requirements for crucibles in view of increased armaments of the United States, and European Powers. But I must enquire about all this on my return to town, or it is possible some light may be thrown on the matter after my lecture on the 7th November. A trebling of price is certainly phenomenal; and I see the total export this year is not to be less than 600,000 cwt. in all probability, or 33 per cent above the last year's export! Thirty thousand tons at an average of £40 to £50 a ton will mean an enormous amount of money to divide among the Ceylonese mine-owners. Probably not less than twenty million of rupees! How much of this will go into the hands of the labourers? Some years ago, Mr. de Mel had one mine that gave him £2,000 profit a year for eleven years. With prices trebled, he and other fortunate plumbago pit-owners must be making very large sums. Let us trust they see to the comfort and safety of their workmen and their proper remuneration. It would be interesting to know if any mines are worked on the co-operative system? Then surely the Government should make "hay" for the general revenue while the sun is shining. The royalty on 600,000 cwt. expected will be only R150,000 or not one per cent on the value; but that cannot be helped. It is the royalty from plumbago dug on Crown lands that should yield more revenue at such a time, or the sale outright of such land.

Turning to the question of my correspondent, I was able to tell him as an exception to the native owning of mines, the case of the late Mr. Tottenham (how far-seeing was our friend to bring out a Mining Engineer to develope his property when he did), and that since then other English capitalists had entered the field. As regards the supply running short, I ventured to say that I saw no reason for its doing so; and that in fact with the advent of a Geological Survey Staff early next year, there ought to be a fresh impetus given to plumbago mining; but as to the price keeping up, that is a matter, I suppose, for which the answer must be sought in London or New York rather than Ceylon.—Now should be the time to get intelligent progressive Ceylonese like the Messrs. de Mel, Fernando and some others in plumbago, to confer some lasting boon on their countrymen—why not provide a Young Men's Institute for Colombo?

PRODUCE AND PLANTING.

American Tea Buyers.—Our New York contemporary, "The Commercial," has the following on the influence exercised by the American tea buyers on the London market. It says: "The London market, the great tea mart of the World, was until lately controlled by a few large buyers, who, by agreeing between themselves to remain out of the market for a sale or two, could readily depress prices. These buyers were, and are, by force of circumstances necessarily 'bears,' because the tea they buy is put up in packets and sold at fixed prices, to which the consuming public has been educated. It can be readily seen that with every change of the market to a higher basis, the price of the packet to the consumer could not be changed, hence the packet tea buyer must purchase at a low price or sustain a serious loss. In this connection a leading dealer in packet teas said yesterday: 'With the American business an important factor in the London market, such a combination becomes unavailing at once, as there are always ready buyers of Ceylon and India tea here when London prices go below a certain limit. Formerly China tea, at 8 cents a pound, came into competition with the pure teas of Ceylon and India, which cost 12 to 13 cents to land. Through the strict enforcement of the standards by the United States Government, those inferior "compounds" are entirely excluded, and China tea cannot be bought under 12 to 13 cents a pound, which brings the two classes of tea practically to a parity, and at the same time the more desirable for blending or any purpose is the machine made tea of Ceylon and India. Thus, it will be seen that the operations of the American buyers immediately nullify any contemplated "bear" movement in London,' as the offers to buy at a price for export to America are always in evidence there. The result will be that possibly after one or two bear attacks the combination will have to fall into line and buy at market prices in self defence. With the consumption of Ceylon and India tea increasing here, in Great Britain and, in fact, all over the world, the trend of price is upward, and after the British "bear" combination has been compelled to buy at current values, the American buying interest will have to raise its limit also, and in that way values will reach a still higher level. Certainly it is that prices are looking upward, and there is nothing in existing conditions that would make shrewd tea buyers hope for or expect lower values. Another strong factor which tends to lessen the influence of the "combine" of packet tea buyers in London upon the world's market is the great number of orders now sent direct to Colombo and Calcutta from houses in America, Russia and Australia." By the way, apropos of tea in America, it may be mentioned that two-thirds of the total tea importations of the United States go in through New York, and amount to nearly 60,000,000 lb. a year. Although Americans are not especially known as a tea-loving or tea-drinking people, they consume 90,000,000 lb. of tea annually.

Tea Cultivation in the United States.—The "New York Commercial," commenting on the report of the tea crop of the Pinehurst tea estate, Summerville, S.E., says "The 'Commercial' has from time to time published opinions of members of the tea trade in this city to whom samples of the Pinehurst tea were submitted. These opinions varied but little regarding the quality of the product. In all cases it was described as inferior to

the best quality imported, and equal to the grade sold at from 22 to 27 cents per pound. Some doubt was also expressed regarding the possibility of tea growing ever becoming profitable."

Tea in France.—There is clearly scope for further and energetic operations in connection with the sale of tea in France. A correspondent of "The Grocer" calls attention to the fact that many tea-rooms have been opened which announce the sale of tea in liquor and in leaf, and most of them advertise themselves as "Five O'Clock Tea Rooms." He says: "I called at one of the newest of these—a very small shop—the other day, and found that the business was being run by two young ladies, daughters of an English clergyman. I tried their tea, and must confess that if the same article were served in Regent Street or Piccadilly the trade done by that shop would be very small. The tea was of a very thin and flavourless description, especially when mixed with milk and sugar. I purchased one of their packets of tea, which was sold to me at the rate of 4s per lb. and on examining it I found the tea was such as would not find a very ready market in England. I submitted it to an expert, who assured me that it would be worth about 7d per lb. on the English market; to that has to be added about 2s 3d for duty and 'octroi,' bringing the cost of the article up to about 2s 10d a lb. Curiously enough, it bore the name of a Swiss merchant, from whom I understand it had been obtained. It is a pity that the French taste for tea should not be educated with something better than this, because there can be little doubt that if the French consumers were taught how to make tea properly, and were taught how to appreciate a good cup of tea, a very great trade might be done in this article in France. There is, I am informed, an attempt to popularise tea in connection with the Indian and Ceylon sections of the Exhibition, but the restriction which has been laid down by the authorities that it shall not be sold within the precincts of the Exhibition is one which will very greatly handicap exhibitors. No doubt many of your English merchants have turned their attention to France as a country into which tea might be profitably introduced, but the failure which has attended their efforts in the past doubtless accounts for the slowness of English merchants at the present day to make a fresh attempt. As, however, there will be a great number of English-speaking tea-drinkers in Paris next year, no doubt a good opportunity will afford itself of making a fresh attempt. In the Exhibition year of 1889 some Englishmen did make the experiment of providing tea served in the English fashion, which met with a limited amount of success; but the numbers of English-speaking visitors next year it is expected will be greater than ever, and so it must be for the consideration of English merchants how far they will make another experiment in this direction."

Coffee Adulteration.—Coffee suffers in the matter of adulteration as compared with tea. The fraud, which is made in Germany, has found its way into Yorkshire, and, according to the Government analyst, it is most difficult, even on close inspection, to distinguish the doctored maize from the genuine coffee berry.—*H. and C. Mail*, Nov. 3.

SHEVAROY PLANTERS' ASSOCIATION.

The following are from proceedings of a meeting of the committee of the Shevaroy Planters' Association held in Yarcaud, on Monday, the 6th instant:—

Present:—Messrs. W J Lechler, Thurston, Short, Rev. M Anderson, Messrs. C Rahm, C G Lechler, S B Nicholson, Rev. J M Kempf, Mr. R Gompertz, (Chairman and Hony. Secy).

Read circular 89-99 from the Secretary, U. P. A. S. I., *re* exhibiting and selling Indian coffee at the Paris Exhibition, and enquiring what our Association is prepared towards the expenses. Resolved:—"That the Secretary, U. P. A. S. I., be informed that this Association is prepared to subscribe R200 towards the expenses of advertising and dispensing Indian coffee at the Paris Exhibition, provided that other Associations will subscribe in proportion."—*Madras Mail*, Nov. 17.

LANKA PLANTATIONS COMPANY, LTD.

Report presented at the Nineteenth Ordinary General Meeting of the Lanka Plantations Company, Limited, held at the Office of the Company, on Wednesday.

1 The Directors now submit their Report for the twelve months ending 30th June last, together with the Balance Sheet and Accounts of the Company made up to that date and duly audited.

2 The season was unusually favourable for Coffee. The crop shipped to London amounted to 722 cwts., and realized £2,843 10s 2d. Last year, the crop shipped was 247 cwts., and realized £1,072 11s 8d. The acreage under Coffee alone is nominally 134 acres.

3 The total crop of Cocoa gathered on Yattawatte amounted to 1,665 cwts., and realized £5,509 18s 10d, against 1509 cwts. last year, which realized £4,866 1s 9d. The cost of seven acres new land, and the net expenditure on clearings not yet in bearing, are charged to capital account. On the same estate 420 lb. Cardamoms were gathered, realizing £40 4s 9d.

4 The Tea received from the Company's estates amounted to 769,578 lb., and has been sold at an average of 7·44 per lb. net, realising £23,862 4s 4d. Last year the company received 731,593 lb. which was sold at an average of 7·45 per lb. net, and realised £22,840 18s 1d. The season was generally unfavourable and the yield fell short of the estimates.

5 The average rate at which drafts were negotiated on account of the season's crops was 1/4, 9-32nds per Rupee against 1/4, 3-32nds last year.

6 The following statement shows the acreage and state of cultivation of the company's estates on the 30th June last;—

Estate.	Coffee.	Tea.	Cocoa.	Grass.	Chena & Patana.	Forest and Timber Trees	Total.
Ampittiakande, Arnhall	20	444	..	4	167	70	705
Fruit Hill	..	227	...	..	10	...	237
Fordyce, Garbawn, Gonagalla & Paramatta	..	794	..	7	..	135	936
Rappahannock	..	322	..	31	30¾	90	473¾
Rillamulle	...	232	..	..	6	20	258
Thotulagalla	114	264	...	...	63	114	555
Yattawatte	..	..	*751	95	294	82	1,222
*68 acres interlined with Liberian Coffee	134	2,283	751	137	570¾	511	4,386

7 The net profits for the past year amounted to £9,544 2s 7d, to which must be added the sum of £644 6s 11d, the balance brought forward from the year 1897-98, making together £10,188 9s 6d.

8 Having already paid a half year's interim dividend on the 6 per cent. Preference Shares to the 31st December, 1898, amounting to £426

6s 0d, the Directors recommend payment of the Dividend on these shares to 30th June last, requiring (less property tax) a similar amount, and having deducted £1,247 1s 8d, being one-tenth of the sums charged to Suspense Account during the ten years ending 30th June, 1898, and (in anticipation) the tenth of such sums for the ten years ending 30th June, 1899, amounting to £1,136 14s 4d, they further recommend a dividend of 8s per share, being 4 per cent. (free of income tax) on the Ordinary Shares, amouuting to £6,000, carrying forward a balance of £952 1s 6d to the next account.

9. The Director who retires on this occasion is Mr. George Allen, who, being eligible, offers himself for re-election.

Mr. John Smith, the Auditor, also retires and being a Shareholder offers himself for re-election.

CEYLON AND INDIAN PLANTES' ASSOCIATION LTD.

SECOND ANNUAL REPORT, 1898-99.

The Directors beg to submit their Report and Audited Accounts for the year closing 30th June last.

The past twelve months have proved somewhat better for the tea industry in Ceylon. With the exception of Kandaloya Garden, all the Estates give a larger profit than for the corresponding period. Kandaloya tea is now being sold on the Colombo maket with better results than would be obtained here, and the Directors hope that next year this portion of the Company's property will do more to increase the profits than it has done hitherto.

The crop has not weighed out as much as expected, but is still 46,664 lb. in excess of the previous year. Estimates for this year anticipate a further increase of 68,000 lb. of made tea, or a total of 740,000 lb., for an expenditure very little exceeding the past year's.

It will be noted that in the accompanying analysis the average sale price has been more, and the cost of production less than last year, except in the case of Kandaloya.

The Directors during the year have paid off the Mortgage and issued Mortgage Debenture Stock for £45,000 at 5 per cent secured on the whole of the Company's properties.

The Directors desire to record their thanks to Mr. George Greig and the Staff in Ceylon for their efforts in promoting the welfare of the Company during the period under review.

The Accounts show that after paying Interest and preference dividend and manager's commission, there is a balance at credit of Profit and Loss of £1,834 6s 9d, the Directors propose writing off £450 from prelimanry expenses, £400 from machinery account, and £150 from debenture issue account, and to pay a dividend on the ordinary shares of 2 per cent absorbing £800, carrying forward the small balance.

Both Directors' and Secretarial fees have been surrendered.

The Auditors, Messrs, Singleton, Fabian & Co., beg to offer themselves for re-election.

Directors—C A REISS, C F DICKINSON.

CENTRAL TEA COMPANY OF CEYLON LIMITED.

Report of the Directors submitted at the fourth annual ordinary general meeting of shareholders held at 20, Eastcheap, E. C., on Monday the 13th Nov.:—

The Directors have the pleasure to submit the general balance sheet and profit and loss account for the year ending 30th June, 1899, duly audited.

	£ s. d.	£ s. d.
The net amount at Credit of Profit and Loss Account, including the balance brought forward at 30th June, 1898, and after providing for General Expenses, Directors' Fees, Income Tax, &c., is ..		,935 7
Dividends on the 6 per cent. Preference Shares were paid for 1898/9 (less Income Tax) amounting to ..	1,305 0 0	
It is proposed to pay a Dividend of 6 per cent. (less Income Tax) on the Ordinary Shares which will absorb ..	1,073 0 0	
And to carry forward to next year a balance of ..	557 7 7	
		£2,935 7 7

The Directors trust the results of the year's working of the Estates will be considered satisfactory by the Shareholders.

The gross average price realised for the tea was 7·87d per lb., as against 7·75d per lb. last season, and the rate of exchange was 1s 4 19·64d as against 1s 4d.

The yield of tea was 331,427 lb., being 377 lb. per acre over a plucking area of 879 acres.

The acreages of the Estates are as under—

Estate.	Tea. In bearing.	Partia bearing.	New clearings.	Cardamoms.	Forest Grass and Waste.	Total acreages.
Kabragalla	..431	61	16	32	397	937
Somerset (Including Easdale and Loxa).	..387	..	13	..	33	433
Total	.. 818	61	29	32	430	1370

Under clause No. 24 of the Articles of Association Mr. J. Sancroft Holmes retires on this occasion from the Board, and, being eligible, offers himself for re-election.

The Auditors, Messrs. Harper Brothers, Chartered Accountants, also retire from office, and offer themselves for re-election.

TEA MACHINERY.—Amongst the announcements of Messrs. Crosby Lockwood & Son's new and forthcoming publications is the following:—

Tea machinery: A Descriptive Treatise for the Use of Planters and Others. By A. J. Wallis-Tayler, A.M.Inst.C.E., Author of "Refrigerating and Ice-Making Machinery," &c.

TO ALL PARTS OF ASIA, AFRICA, AMERICA AND OCEANIA.

Seeds & Plants of Commercial Products.

Castilloa Elastica Cervantes.—Orders being booked for the coming crop of seeds available in March and April, selected seed from very old trees. R. N. Lyne, Esq., Director of Agriculture, Zanzibar, writes under date 24th August, 1899:—"Please send me 200 seeds of Castilloa Elastica for further trial; the seeds of Castilloa you sent me last August germinated very well." Price and particulars in our Circular No. 32; special quotations for large orders according to quantity; immediate booking necessary to avoid disappointment.

Hybridised Maragogipe Coffee.—A larged-beaned superior variety of Coffee in demand; orders booked for the coming crop of seeds, February and March delivery. Price according to quantity on application.

Hevea Brasiliensis (Para Rubber).—Orders being booked for the coming crop available in August and September, 1900. This is the only crop of seeds in the year. All orders should reach us before the end of July to avoid disappointment, as we have to make arrangements in time; guaranteed to arrive in good order at destination. We have already booked a large number of orders. A Sumatra Planter writes, dating 9th March, 1899:—"I consent to the price of £——— per thousand. I herewith order 50,000 upon condition that you guarantee at least 33 % seeds germinating." Plants can be forwarded all the year round in Wardian cases. Price and particulars as per our Circular No. 30. A Borneo planter writes dating, Sandakan, 17th August, 1899:—"The last lot of Para seeds turned out very well."

Ficus Elastica (Assam and Java Rubber.)—Seeds supplied by the pound with instructions; price according to quantity. This tree grows equally well in high and low land, in forest and grass land, its cultivation being extended largely by the Indian Government. For price of seeds with particulars as per our Circular No. 33.

Manihot Glaziovii (Ceara or Manicoba Rubber).—Fresh seeds available all the year round; price as per our Circular No. 31. It is superior to Mangabeira rubber and second to Para rubber.

Urceola Esculenta (Burma Rubber) and **Landolphia Kirkii** (Mozambique Rubber).—Seeds and plants, both are creepers.

Cinchona Seeds.—Different varieties.

Sterculia Acuminata.—(Kolanut). Superior quality, seeds and plants; price on application, packed to stand the transit well for several months, a hardy tree, cultivation easy.

Erythrina Lithosperma.—Thornless variety, new crops of seeds ready in December, May and June Price according to quantity on application.

Seeds and Plants of Cinnamon, Nutmeg, Clove, Sandlewood, Pepper, Cardamom, Vanilla; Arabian, Liberian and Maragogipe Coffee, Cacao, Tea, Coca, Fibre, Medicinal and Fruit Trees, Shade and Timber Trees, Eucalyptus various varieties, also Palms, Bulbs, Orchids, &c.

Our enlarged Descriptive Price List of Tropical Seeds and Plants of Commercial Products for Foreign Countries for 1899-1900 are now being forwarded to applicants in different parts of the world. Also Descriptive Price Lists of Seeds and Plants of Fruit Trees, Bulbs, Tubers and Yams, and Orchids.

"SOUTH AFRICA."—The great authority on South African affairs of 25th March, 1899, says:—"An interesting Catalogue reaches us from the East. It is issued by William Brothers, Tropical Seed Merchants, of Henaratgoda, Ceylon, and schedules all the useful and beautiful plants which will thrive in tropical and semi-tropical regions. We fancy Messrs. Williams should do good business, for now that the great Powers have grabbed all the waste places of the earth, they must turn to and prove that they were worth the grabbing. We recommend the great Powers and Concessionaries under them to go to William Brothers."

A leading Planter writes from *New Hebrides* under date 17th January, 1899:—"I shall like a few more of your Catalogues to distribute through these Islands, as I feel sure many would place themselves in communication with you, did they know where to write for Seeds and Plants."

Our New Descriptive Price Lists of Seeds of Shade Trees for Coffee, Cacao, Tea, Cardamoms, &c., Timber Trees, Trees for Avenues, Hedges Wind and Shelter Belts, Ornamental Trees, Shrubs and Climbing Plants; and Seeds and Plants of Palms, Calamus, Pandanus, Cycads, Tree and other Ferns, Crotons and Dracinas, now being prepared and will be ready shortly.

Agents in London:—MESSRS. P. W. WOOLLEY & Co., 36, Basinghall Street.

Agent in Colombo, Ceylon:—E. B. CREASY, Esq,

Telegraphic Address:
WILLIAM, VEYANGODA, CEYLON.
Lieber's, A.I. and A.B.C. Codes used.

J. P. WILLIAM & BROTHERS,
Tropical Seed Merchants,
HENARATGODA, CEYLON.

WYNAAD TEA COMPANY, LIMITED.

The fifth annual meeting of The Wynaad Tea Company, Limited, was held at the company's office, 20, Eastcheap, E. C., on 30th Oct., Mr. J. C. Sanderson presiding. The secretary having read the notice convening the meeting,

The CHAIRMAN, in moving the adoption of the report and accounts, said:—You have all had a copy of the report and accounts, so I presume I may take them as read. As explained to you in the report, the accounts are only for eleven months, the reason being that our managing director in India wished that our year should end at the same time that the financial year of all other tea companies ends, viz., at the end of March. The net profit of the working for the past season, after crediting the block account for the tea which had been picked from the Cootacovil Estate, is £728 2s 9d and this profit the directors are going to write off the debit balance of last year. They regret they cannot give you a dividend; but, of course, while that debit balance exists we cannot declare one. We hope that it will all be wiped away next year, and that there will be something to the good. Besides the credit which we have taken for the tea, there are legal charges to the extent of £231 13s, which have been outstanding for some years, but which are now all wiped off, so that I think (and I hope you will agree with me) that this year's report is decidedly the most favourable one we have had for some time. The crops for the past season turned out very satisfactorily. The coffee crop was the largest gathered for some years, being fully 51 tons, and the director were very fortunate in selling it at a very high price before the fall in coffee took place. The pepper crop was also sold at a profit, fetching 45s 6d per cwt, while the first pluckings of tea, which amounted to about 15,000 lb. from the Cootacovil estate from the 1895 planting, fetched an average price of 7½d per lb. With regard to the present position of the estates the manager reports that their condition is highly satisfactory throughout, and the prospects for this year are encouraging. The tea leaf is coming in so fast that we shall have to put in more machinery, and according to the letter which we have received today we are some 7,000lb ahead of estimate. The estimate, as the report tells you, is 78,000lb for this season, and with by far the heaviest month, of the year to come we have in the first six months received nearly half the estimate. The shrubs are flushing splendidly, and they are in a very healthy condition. The estimate, for the pepper crop this season is about 20 tons, and we are just on the point of selling it at considerably more than the price realised last year. With regard to the coffee crop, it will probably be from 18 to 20 tons, but the market is rather too uncertain for us to forecast what we shall get for it, although we think it will come on a better market. The outlook for 1900-1 is very promising. The coffee trees are making splendid wood, so that we may expect a considerable increase over this year's crop, and the tea yeild will be much more, because we shall have the first hundred acres in full bearing, and we shall also pluck from the second hundred acres. Under these circumstance the directors confidently look for a yield of about 150,000 lb. I do not want to hold out too sanguine a view, but I think we have turned the corner, and that the time is coming when we shall all be repaid for our long waiting. Before asking you to adopt the report and accounts, I shall be very pleased, with the assistance of Mr. Walker, to answer any questions any shareholder may wish to put to me. I have now great pleasure in moving the adoption of the report and accounts.

The resolution was seconded by Mr. Labouchere.

In reply to a question from Mr. Summerhays, the CHAIRMAN stated that the proceeds of the tea were credited to the block account and not to the revenue account, because the tea was not in full bearing.

In reply to a question from Mr. Donald Andrew, Mr. WALKER stated that with the exception of a short period at the beginning of the year they had had no difficulty in getting labour, in fact, there was far more labour than they could employ. They had lost no tea through scarcity of labour, so that he thought they could fairly say that they would be able to get all the labour they might require.

The report and accounts were then unanimously adopted.

On the proposal of Mr. LABOUCHERE, seconded by Mr. Andrew, Mr. Sanderson was unanimously re-elected a director of the company.

Mr. KNOTT proposed, and Mr. Goodwin seconded the re-election of the auditors (Messrs. Lovelock & Co.). The motion was carried unanimously.

The next business of the meeting was to consider the resolutions for financing the company by borrowing money secured upon debentures.

The CHAIRMAN in proposing these resolutions said:—You will no doubt remember that last May we had a meeting, and a resolution was passed giving the directors power to raise £10,000 in debentures to carry on our properties and to pay off a large block account which we owed. There were certain informal matters which interfered with carrying this proposal through, and one, the most important, was the question of taking away all our borrowing powers. Those shareholders who understand the working of tea will know that the business has to be carried on by means of agencies, and that we have to borrow money for the upkeep—that is the cultivation of our crops until they are marketed. The resolution as it stood would have debarred the directors taking powers to borrow money for this purpose. We have since reconstructed the resolution, and I now beg to bring it to your notice. I am sorry to say that we have had to change our agents, and it is with great regret we have done so, for we have experienced every consideration and assistance at their hands. It was, however, hardly within their province to take up debentures in another tea company, so they informed us that if we could make other arrangements they would not stand in our way, that is to say they very kindly allowed us to break our contract in the middle of the season. We have therefore arranged with Messrs. R. and J. Henderson to take the balance of any debentures that the shareholders do not wish to take. The directors have subscribed for £500 each, and you may be sure it is considered a very good and safe investment as otherwise your directors and Messrs. R. and J. Henderson would not be willing to take them up. Our property is a valuable one; an independent valuation which we had made in 1897 amounted to £40,000, and since then the value has been increasing by a part of the acreage of tea having come into cultivation, and the coffee and pepper crops having greatly improved. I repeat, therefore, that with these fine and valuable properties as security, it is a very good and

safe investment for the debenture holders. Messrs. R. and J. Henderson wish first to give the shareholders an opportunity to take the debentures, because they carry the condition with them that they can be exchanged for 10 per cent. preference shares any time prior to the date of repayment, so the shares may become of great value. Those, therefore, who help the company through the pressure at the present moment will not regret it hereafter. I do not think that I have anything more to say, so I will proceed to move the following resolution :

"That in lieu of the authority to borrow £10,000, conferred upon the directors by the resolution of May 27, 1899, the directors be, and they are hereby authorised, from time to time to borrow for the purposes of the company sums of money not exceeding in the aggregate £10,000, to be secured by debentures charged upon the company's property in such manner as the directors think proper, such debentures to bear interest not exceeding six per cent per annum, and to be repayable at par at the expiration of five years from the date of issue, with the option to the company of repayment, in the meantime, at a premimum of £2 10s per cent., upon six months' previous written notice, and to confer upon the holders thereof :

"(a) The right to receive notices of general meetings of the company, and to attend and vote at such meetings in manner provided in the case of shareholders by the articles of association of the company.

"(b) The right during the said period of five years to exchange such debentures or any of them for fully-paid 10 per cent. preference shares of the company, notwithstanding the terms of clause 6 of the articles of association."

The Chairman said that he must here explain that, according to the terms of clause 6 of the articles of association, any issue of new shares should be offered to the shareholders pro rata. As they had only about £4,000 left of the preference shares unissued, and they intended issuing £10,000 debentures, there would be a difference between that sum of £6,000, which might have to be issued hereafter. The second resolution was :

"That the directors be and they are hereby further authorised from time to time to borrow upon the security of the crops and prodnce of the company's estates any sums of money required for the purposes of the company."

These resolutions were seconded by Mr. Donald Andrew.

Mr. Summerhays then said that, as the legal adviser of the company, and also as a small shareholder, they might like him to make a few remarks. From a legal point of view the case was an extremely simple one. Here was a company to all appearances on the eve of prosperity, but in order to make its position absolutely secure it was necessary to raise a substantial sum of money, viz., £10,000 to give full effect to its powers and to make the most of a very valuable property. It seemed the best way of accomplishing this object in the interests of shareholders was by raising money upon the issue of debentures which form the first charge upon the company's estates. This is a case in which the shareholders should first be considered, and in which they should have the first opportunity of taking up these debentures, more especially considering the special advantages which were to accrue to the debenture holders. It might not suit the views of a good deal of the company's share holders to add to the present holding of preference shares, and for the very good reason that money could be raised for the purposes of the company which would come in front of those shares, but on the other hand, if those shareholders now came to the assistance of the company they were only helping towards this, and they got the very best security for their money. They got a first charge for this relatively small sum of £10,000 upon £40,000, so that their security, became undeniable. This was not all. They also got the special condition of being able, while these debentures were accruing, to surrender their debentures which gave 6 per cent. interest, and taking 10 per cent. preference in their place. He could conceive of very few securities more advantageous than that which was offered in the first instance to the shareholders, and afterwards to the public. The method of procedure was perfectly simple. He might mention, as a small shareholder in the company, that he was so convinced of its being a safe investment that it was his intention to recommend it to his Indian clients. It was an essential part of this scheme that debenture shareholders might exchange their debentures for preference shares, so that it was really necessary to alter the sixth article of association. However, it was the spirit of the thing that was the main principle. If any difficulty should arise two meetings would have to be held, and then the position of debenture-holders would be secure.

The resolutions on being put to the meeting were unanimously adpoted, The chairman then proposed a vote of thanks to the staff in India for their hard work and efficient management. This was seconded by Mr. Summerhays and carried unanimously.

On the proposal of Mr. Labouchere, who said that, as next year they would probably meet the offices of Messrs. R and J Henderson, this was the last opportunity the directors might have of passing a vote of thanks to the Secretary, Sir Wm. Johnston, for the eminent way in which he had done his work. He had pleasure in proposing the vote of thanks. The proposal was seconded by the chairman and carried unanimously. A vote of thanks to the chairman concluded the meeting.—*Home and Colonial Mail*, Nov. 3.

GOOMERA (CEYLON) TEA ESTATES CO., LTD.

DIRECTORS' REPORT.

The Directors herewith beg to submit the fifth annual report and balance sheet for the year ending June 30th, 1899.

The accounts, after paying debenture interest writing off the balance of preliminary expenses out-standing, and paying 3 per cent. on the preference shares, show a balance to the credit of profit and loss of £353 2s 8d. Out of this a final dividend of 3 per cent. has been paid on the preference shares, leaving £203 2s 8d. to be carried forward to next year.

Although considerably better than last year, the result of this year's working has not been as satisfactory as hoped for. There has not been a good market for medium teas, such as the Company produces, during the year. It is hoped that the young tea now coming into bearing will add

materially to the yield and the profit of the Company in the immediate future.

The estates of the Company are reported to be in thoroughly good order. During the past year some of the machinery has been renewed and the factories put into good repair. Extensions have been made to both of them in view of the young tea about to come into bearing; this latter expenditure has been charged to capital account.

During the year Mr. C. J. Rowe and Mr. F. A. Macrae died, and in accordance with the Articles of Association, Mr. B. F. White was appointed in the place of the former and Mr. A. Valentine Holland was appointed in the place of the latter.

THE "KNOCK-OUT" IN THE TEA MARKET.

(COMMUNICATED.)

In spite of many assurances to the contrary from those interested, for sometime it has been generally known that a unity of action existed among the larger buyers of tea, which has now assumed the shape of The Tea Buyers Association, with the object of buying collectively at the public sales and acting on the lines of what is generally known as "a knock-out." There is no doubt about it, and after all it is only an outcome of the modern mode of doing business. Anyone who likes to go to Ingram House, 165 Fenchurch-street, can see the title in the porch:—

THE TEA BUYERS ASSOCIATION.

Most of the following was compiled in January, 1899, by one who had previously devoted some months to studying the Tea Trade in all its branches, from arrival of its produce in London to its retail—comparing it with the other large industries, such as brewing, distilling, iron, cotton, leather, &c.; in search of any information likely to be of service in improving the system of selling tea.

In carrying out this, his endeavours have been to adhere as closely as possible to simple facts and direct conclusions, and so avoiding all that is remote, or complex.

The Tea Planting Industry of India and Ceylon is now suffering depression from four causes:—

1st. An arbitrary action of the Indian Government, affecting so-called exchange.

2nd. Occasional and periodic rushes of tea from India and Ceylon upon the London market, necessitating some order and regularity in the quantities offered for sale weekly.

3rd. The want of definite and reliable information on the quantities of tea produced and likely to come forward from India and Ceylon.

4th. The same collective care in selling that is exercised in buying teas.

Temporary over-supply seriously brought down the price in the tea market during the early part of last and this year; and although the statistical position of all teas, a little later, shewed the stocks to be almost identical with those of 1897, yet there was no reversion to the prices then ruling, at least for Indian teas. Ceylon, by extra fine plucking, has barely (1898) maintained its average price. It is observable, however, *that a return to what economists call an equilibrium of the market, does not re-establish a relative and permanent recovery of price.*

There is also every indication that the market has hitherto periodically suffered far more from the irregular manner in which produce has reached it, than from over-production, although this position has been very nearly reached.

Some years ago, when consumption was smaller, the public sales market in Mincing Lane was frequented by a proportionately larger number of tea buyers than now: tea was brought in smaller parcels obtaining livelier competition.

PUBLIC SALES.

Now in spite of the so-called sales by Public Auction, everyone knows that by far the larger proportion of tea now sold in Mincing Lane goes from seller to buyer without any public competition whatever, it evidently being arranged beforehand who shall be the purchaser. Formerly, the statistical position of the tea market was no more favourable to growers than it is now; the present market, however, has ceased shewing the same response to improved statistical conditions as it then did.

Although the excessive supply of tea brought to sale during the past few years, has gradually been worked off, assisted by the increased consumption of foreign markets, yet there is not the reacting buoyancy that the market should in consequence possess.

Nor is any one prepared to dispute that the buying of teas in Mincing Lane has fallen into fewer hands, and that the results obtained are not so satisfactory as formerly.

Also few will admit that the market responds now as formerly to supply and demand; for, from a grower's point of view, whatever be the cause, the fact remains of the existence of some adverse influence somewhere. Consequently, if the present order of things continues unaltered, the open market is not likely to adjust itself in any adequate degree.

The following table shews that something besides supply, demand and over-production have been influencing the downward tendency of tea prices, for the past 15 years, although probably the chief cause has been the irregular supply of the market.

HOME CONSUMPTION OF TEAS.

Memo shewing the total home consumption of all teas, including India, China, Ceylon and Java; also stock at the close of each year; with average of price and the proportion of stock to consumption over 15 years, in intervals of three years, from January 1st to 31st December in each year:—

Year.	Home consumption in lb.	Total stock at the end of each year.	Average price. d	Proportion of stock to consumption. per cent.
1898..	235,414,185	101,638,000	8·35*	43
'95.	221,731,490	103,480,802	9·63	46
'92...	217,135,679	98,244,217	10·07	45
'89...	185,578,298	113,189,357	10·79	60
'86...	178,809,197	103,157,446	11·77	57
'83...	170,780,777	118,060,000	12·46	69

The foregoing table proves that just the opposite has happened to what would be expected. A proportionate reduction of stocks should be followed by a corresponding rise in prices and a proportionate increase of stocks by a fall.

This surely shews that some other influence must be at work, for there is no natural response to supply and demand.

The progression of the figures from ·43 to ·69 are *gradual* over 15 years, so the result can scarcely be considered accidental.

* 8·35 is only approximate.

As a matter of fact, judging from all ordinary experience, the markets were proportionately over-stocked 15 years ago, than they are now.

It is no use hiding the fact, that the influence of the regular arrivals of Ceylon teas throughout the year has in a measure stopped the necessity of so large stocks—a secure condition which, if less assured, would be more to the advantage of tea-growers.

MARKETS.

Probably buyers have noticed that tea has gone steadily down for the past 25 years and so do not care to stock against a falling market. Reverse the order, even by the slightest degree, and the opposite will happen and this latter is urgently wanted.

CLOSING THE MINTS.

In spite of Great Britain's boast of Free Trade, the Indian and Ceylon tea-growers have suffered from the arbitrary action of the Indian Government, in protecting its own exchanges at the expense of exporters, by closing the mints, which has been disastrous to tea-growers.

Without going unnecessarily into details, it may be considered that between the natural value of the rupee and its present forced value, that 1d per lb is added to the cost of production, which, roughly speaking, is almost equivalent to 4 per cent profit on the average standing capital value of the tea property of India and Ceylon—a very serious loss of itself, but far more serious when regarded in its capitalized form.

If trade were conducted free of undue influence, from either buyer or seller, these unsatisfactory relations would soon readjust themselves; but with buyers becoming fewer in number, representing larger collective capital and working on larger lines, there appears to be evidence that they have undoubtedly obtained some undue influence over the market.

Within the last twelve months it was mooted that further amalgamations and the offering to the public of certain large distributing Tea Companies was probable, which would still further reduce the number of public buyers at sales.

Indeed it is not necessary to hide the fact, that for this purpose capital is easily procurable, expenses of management saved, and additional power attained with every probability, that these conditions will increase rather than diminish in the near future.

For, doubtless, in these large concerns with special organization, there arises a most careful scrutiny of where money can be saved or made; they also command the most efficient and skilled men, and with their increasing magnitude, opportunities in their dealings for keeping down prices will not be neglected.

As compared with butter, bacon, sugar and other groceries, tea is sold at a much higher profit by retailers, further evidenced by the gratuitous offerings to those who will only purchase their teas. Growers, if united, might have something to say on this; indeed they would actually posses a power right through the trade, which, even if not used, would at least exercise some control.

PRICES OF TEA.

Unlike wheat and other annuals, the production of which can stop at the close of any season, tea does not come into heavy yield until four years after planting operations have begun, by which time it has attained a value which *necessitates* continued cultivation: consequently, from this cause among others, it is apt to arrive with considerable irregularity in the market and this produces falls in price, quite unexpected and unprovided for.

There is also a time in each year, usually during June and July, when it may be expected that the London market will become inactive owing to the bulk of new Indians shortly expected; and it is at this period of the year that the heavy shipments of Ceylon arrive. The consequent fall in prices, that takes place then, exercises its influence on prices throughout the remainder of the year.

Those who have studied economics know that the measure of price of the first transaction has a most material effect upon those which follow, and this principle is acknowledged by all traders.

If so, what can be expected from sellers in a market, who use no systematic and general mean of regulating the quantity of tea offered for sales and allow large and ordinary arrivals to take their place indiscriminately without attempting their regulation?

What would be thought of a man who rushed Company shares on the Share market without any regard, at the time, whether they were wanted or not? What principle is right in an individual, must also be right in an industry, having similar pursuits and interests.

Doubtless, the permanent price of tea, from year to year, is ruled more by the *lowest price* of the market at the beginning of the season than by any other cause; and if these periods could be tided over without any material fall, a better price, until these circumstances occurred again, might be insured.

IRREGULAR ARRIVALS.

The effect of these irregular arrivals being thrown thus upon the market is bad enough on produce; but upon the capital value of property and upon the tea share-market, it may truthfully be said that recognised stability is destroyed; and there is every reason to believe that, unless some permanent equalising control can be brought to bear, this condition of things will most assuredly be *more frequent in the future* than it has ever been in the past.

Owing to the small margin gradually remaining to tea-growers to go and come upon, the collapse of prices, which takes place almost yearly, assumed a very serious aspect during the early part of last and also this year. This, however, might have all been moderated by the slightest equalisation of the quantities of tea thrown upon the market, from both Ceylon and India.

No fair critic would allow that, in the public auction sales, the buyer and seller are upon equal terms. The buyer can, at any sale, buy or not, just as he chooses; he claims the right of re-bulking, objects to non-sampling breaks, claims right of objection on every conceivable point, not the least of which is a regular outcry of "quality falling-off," whenever the market becomes a little over-supplied, leading to endless, and often useless, correspondence between London and the tea gardens.

Against these the individual seller has but one redress, a futile one; if the bid be unsatisfactory, he can withdraw his teas, but as, under the present condition of the market other sellers are easily found, he is no better-off. Individually, he is powerless, on the other hand; combined growers would have it practically their own way.

The buyer can always arrange his purchases so as to obtain a marginal profit on his re-sales,

which no ordinary circumstances are likely to upset, while with the seller, everything is against a fair marginal profit at all commensurate with his outlying capital and yearly cost of production: so the only way this can with any permanency be retained must be by some collective means.

PROPRIETORS NOW RESIDENT IN LONDON.

The present system was unavoidable when the grower and proprietor lived abroad; but now the proprietary of tea-gardens chiefly rests in London, it is time more up-to-date and equitable terms of business were instituted between buyer and seller. If for no other reason, at least to be prepared for differential actions of Government and adverse defensive measures of trade.

It might be asked why sellers should not exercise the same controlling influence over the markets of wheat, sugar, coffee, cocoa, etc. The reply is: other markets compete with London in these, but London practically has the monopoly of British-grown teas; neither are these other products so favourably situated for the purpose, their growers being too much scattered.

Anyhow British tea-growers have object lessons before them, in closed mints and sugar bounties; so may rest assured that any satisfactory countervailing influence will not arise unless they take a lesson *from the owners of British industries* and either rise as one man and protect themselves, or allow the *interests of the consumer* to be alone considered, as with the West Indian sugar industry.

ASSOCIATIONS IN LONDON.

Tea-growers or their representatives do business with brokers, dock-owners, etc., *who all have their unions or associations*; and there are also very distinctly arranged understandings among tea-dealers and grocers; perhaps, not so definitely arranged, *but they exist*, or, as they know very well, trade would not be so advantageously done: unwise competition would as soon, with tea growers, make their business unsteady and insufficiently profitable.

Political economists lay down a maxim, that what is division of labour in the individual becomes Free Trade in the State: so surely it is within the legitimate function of the seller, to regulate his sales to the requirements of the market, without infringing the laws of Free Trade; and if so individually with division of labour, collective action does not alter the principle but merely increases the numbers in operation.

Indeed, no principle of Free Trade is infringed and the evidence of one of the first Professors of Political Economy, on combining to regulate the ales of the tea market, is that it would be wise rade to do so.

It is certain that the ordinary operation of natural trade cannot fight against the differential impositions of the Indian Government, any more than a man who does not fully protect his own business can expect to compete with another who defends his at every turn.

No matter how necessary for the financial arrangements of India, it is not likely that the protective action of the Indian Government would have been so widely approved, were it not that it gives immediate benefit to the official classes and to British investors in Indian finances. If the measures taken by India were necessary and so right, a similar course under the circumstances by the British Tea Industry *will not be less right*; federated too, it will have sufficient power to carry out the measure.

SOMETHING MUST BE DONE.

Under any circumstances, as British growers are at present placed, with a practically differential tax against their own products, with continued falls in price, irrespective of favourable statistical conditions, *something must be done* to prevent this continual downward tendency of the market. Last year, between May and August, tea fell ½d and *there is no reason, as the market is at present constituted*, that it should not continue doing so unless come collective means are adopted to meet the situation.

SUUM CUIQUE.

A REPLY TO "SUUM CUIQUE."

Colombo, Nov. 22.

DEAR SIR,—Your article appearing in today's paper signed "Suum Cuique" is indubitably a most interesting and able communication. It brings into prominence the leading features of the position of tea and the factors that effect its price.

I think, however, that the table of comparison of prices and proportion of stock to consumption is not carried far enough to prove that stock has no, or even little, effect upon the prices which the "Buyers' Combination" is prepared to pay. This is not fault of your correspondent because the proportion of stock to consumption has only lately, namely, at the end of 1898, dropped materially below the proportion shewn in 1892, which was, (I quote his figures), then 45 per cent against 43 per cent in 1898; the effect of this falling-off of stock at the end of 1898 has been that during the current year the average price of tea has risen, and if the Calcutta export falls off a little and we do not go ahead too fast, there is no doubt whatever that the price of tea will still further advance; but these are big "ifs." But, as your correspondent says, the constant flow of tea into the consuming markets (there is no off-season now to give a buyer a chance of holding) prevents any distributor feeling that he is bound to stock; and the markets, are therefore, immediately affected by an excess in the offerings over and above the immediate hand-to-mouth demand. I think that sellers and buyers are agreed that there is no more sensitive market than the the tea market, nor any market where the prospects of supplies are more studied and the effects more anticipated or discounted; but as the trade are forced to buy every year during the months of September, October, November, December, and January, 20 per cent more tea than they can deliver, it is not to be wondered at that however sanguine the buyers may be as to the cheapness of the article, there is bound to arrive a time each year when the price is forced down below the level which the estimate of the crops warrant.

The position would be improved for the planter if there were a buffer between him and the distributor such as there is in every other large article of produce; I refer to merchants, speculators, men who seeing that a position was unwarrantable as regards prices, could have facilities of

buying and of holding the "Umbrella" during the downpour of tea which occurs during the months named above.

It is not the business of a planter to speculate. His risk and duty is to make tea, and to sell it at once and obtain his money quickly, and the agency houses in London and elsewhere recognise this and wisely sell on arrival, and, in my opinion, no combination of Tea Companies could be formed of sufficient strength to regulate supplies so as to keep the price of tea up during the heavy months of the year.

If a body could be formed, among the various owners and Companies—each proprietor subscribing *pro rata* according to the number of acres under bearing, to a sufficient amount to enable the body to sustain prices when they fell below a level warranted by the whole position of tea—why then prices would not fall below their proper level.

Such a company would have to keep itself well informed of every movement in the trade; it would have to know what the export from India was going to be; what the out-turn from Ceylon would be, how Dealers' Stocks were working off; and watch any increase in the export of China, caused by the keeping of the prices of British-grown tea too high; its operations would have to be guided by the deliberations of an experienced Committee, and directed by a smart tea expert.

Granted that these conditions are obtainable, in combination with a few others, which I will not weary you with now; and, there is no doubt in my mind, that they are obtainable: then the mere announcement that the "Planters' Protection Society" was going to buy, would so reassure the trade, and tighten things; that it is more than probable they would have to buy nothing, the competition of the alarmed distributor would prevent the Company buying at low prices.

If the Company did buy a few thousand chests, the operation would not only have prevented the Market falling, but when the months of light supply came along, it should have an opportunity of making a profit on them; and pay a dividend—a dividend wrenched from the maw of the insatiable distributor.

London Warehouse charges.—There is an agitation very justly in progress, to reduce the London Warehouse charges; some years ago the London Warehouses used to compete for business and in doing so they would cut their prices; some would offer 25 per cent discount, others 50; and 75 per cent has been known; this was suicide for them, so they met together and made a scale, and bound themselves under large penalties to not accept business under the scale. The result was that tea found its way into the Dock Warehouses and the last state of many of the outside Warehouses was worse than the first. What did they do?—with commendable enterprise, they bought tea gardens, and floated Companies; and even bought tea when it was cheap in Colombo and in Calcutta. The result of the buying and flotation of tea gardens, has been that the warehouses have tea to warehouse, and make a fine profit out of the business; the result to Ceylon has perhaps not been an unmixed evil, for one of the factors of the boom in tea estates a few years ago, was the anxiety of the wharfinger to obtain tea to warehouses. These facts, sir, would tend to show the difficulty of fighting the London Warehouses on the subject of their charges, they being so intimately mixed up with the proprietorship of much of the tea in this island, and regarding a dividend as quite secondary to charges "fine and large."—Your humble and obedient servant,

DIRECTOR.

The British Tea-Industry.—A most exhaustive study of the tea-trade appears on page 414, one which is well worth the attention of all planters who are at all concerned in the subject. The letter is the third of a series from a veteran correspondent, signing "Suum Cuique," who has devoted months of reflection and enquiry to the question. Two important conclusions are arrived at—we cannot today touch on all the points he passes in review—which are:—(1) that, the permanent price of tea from year to year being ruled by the lowest price at the beginning of a season, efforts should be directed towards tiding over these periods without any material fall, the constant tendency of the market of recent years having proved a downward one; and (2) that some collective means must be adopted to prevent this downward tendency. Every one knows or ought to know that, even if advisable at all, the reduction or abolition of the British tea-duty is an impossible object to aim at, this time of heavy war expenditure; and that whatever decision, on the matter, if any, is arrived at by the Planters' Association next month will be an academic one merely. The Indian Tea Association, the minutes of whose meeting of October 31st, are unfortunately crowded out today, have set about the right line of attack—namely, that upon excessive dock and warehouse charges. And, it will be seen from them tomorrow, the London Committee of the I.T.A. have been asked to bring matters to a definite issue. We cannot believe that any practical good can be attained at Kandy by discussing the Tea-Duty on Tuesday week, whereas if Ceylon joined hands with India over dock and warehouse charges, some effective means of cheapening the cost of supplying tea to the London market might be secured. Meanwhile everything must be done to develop the Colombo Market as far as possible for there is ample scope in this direction, and it would be a curious reflection on the tea island if the foreign buyers we have welcomed here, were at any time to find they could not obtain all their requirements at this growing source of direct supply to the countries they represent.

Indian Tea Exports.—Statistics published by the Indian Tea Association, with reference to the exports of Indian tea from Calcutta, show that in the month of October last the sailings to Great Britain increased to 21,692,976 lb. as compared with 21,466,999 lb. in the same month last year. More noticeable increases took place in the sailings to Australia and New Zealand, the figures being 1,763,291 lb., and 426,867 lb. respectively, and to America, the latter total being 1,495,391 lb. in comparison with 583,316 lb. in October 1898. The sailings to other places show a slight falling off, 1,216,278 lb. having been exported in October last year and 1,031,405 lb. in this.—*Pioneer*, Nov. 18.

Correspondence.

To the Editor.

ALL ABOUT RUBBER.

Botanical Department, Trinidad,
Sept. 22, 1899.

GENTLEMEN,—Always the first in the field to collect and disseminate information likely to be of use to the planting interest, you have only acted up to your traditions in issuing "All about Rubber" 1899. The book is a perfect compendium of information on the rubber question, and affords me my first look at the latest circular of the Ceylon Botanical Department, and of Mr. Parkin's Report. I have no time today to point remarks at length, but I may say that I am unable to follow some of the propositions of Messrs. Biffen and Parkin.

I cannot see where the evidence comes in, which makes the Ceylon Castilloa a different *species* to that in Trinidad. Surely it is possible to follow the recognised method of sending specimens to some large herbarium for identification, rather than to *guess them different*, to explain differences in the latex. I might as well declare the Heveas different because that of Ceylon has "no pronounced odour or taste," while our *Hevea brasiliensis*, is readily distinguished by a strong odour of stale saltfish; as can the prepared Brazilian article. I cannot reconcile Mr. Parkin's views on coagulation with my own. If coagulation is brought about by the "*separating of the proteid matter from solution which entangles in its meshes the rubber particles so to form a clot*," how is it that on analysis of rubber prepared by another method it "*just showed a trace of nitrogen*" only. The latex of Ceylon "*does not behave*" like the latex Mr. Biffen describes, so it is made out to be a different species. "Cream left on" the surface of water, after all proteids are washed out, will coagulate naturally, that is to say, it will be "*brought into a mass*" curdled, or solidified. "All about Rubber" should be in every Rubber-planter's hand, because it is right that they should be conversant with the different views afloat, and the course of the various experiments.—I am, yours faithfully, J. HINCHLEY HART.

CEYLON TEA IN CANADA.

Montreal, Oct. 4.

DEAR SIRS,—Richmond is the Province of Quebec, in which province there is a population of one million five hundred thousand souls, eighty per cent of these being French, who use almost exclusively China and Japan teas. "Salada," our own specialty, is being pushed on this ground vigorously, and has been very kindly received by the English-speaking portion of the population, and we are gradually (though *very* gradually) getting some support from the French element. The paper above referred to will give you an idea of what we are doing in the way of advertising. This is only one of a series of seven subscription papers that have a large circulation throughout this province, and our red advertisment appears in each of them the same as copy sent you, and is an innovation in newspaper advertising and a striking one too. Besides these papers we are advertising in many others in this province, both by display advertisements and readers, together with an extensive display of enameled window signs, and an almost lavish distribution of samples. This good work is backed up by travelling representatives that are on the road continuously covering every town, village and hamlet. Some day we hope to have succeeded in converting a large proportion of the French-speaking people to the use of the better and purer teas from your island in which we are mutually interested. Of course beyond this Province are the provinces of Nova Scotia, New Brunswick, Prince Edward Island, and Cape Breton; all of these places we are doing a large and growing business in, and have lately opened up in Newfoundland. We shall feel obliged if you will mention these advertisements in your next issue.—Yours very truly,

GEO. MANN, Manager for Eastern Canada.,
The "Salada" Tea Co.,

[Planters in Ceylon will be glad to hear of the work that is being done to specialise their tea, more especially among the less easily convertible French-speaking population of the Dominion. The advertisements are of a most striking and attractive nature.—ED. *T.A.*]

A COCONUT ANALYSIS.

Colombo, Nov. 21.

DEAR SIR,—I beg to enclose report an analysis of a Coconut and shall be obliged if you will give it publicity in the columns of your paper.—Yours faithfully, A. BAUR.

REPORT.

Though there exist several analyses of parts of of the Coconut, no one seems to have undertaken the task of getting a complete analysis made with a view of ascertaining the actual demand made by the coconut upon the mineral constituents of the soil. Yet this knowledge is of paramount importance to those going in for manuring owing to the different customs which prevail, either of exporting the whole or only part of the nut.

I am glad therefore to have the opportunity of supplying those interested with a complete analysis executed by Dr. F. Bachofen, in charge of my Chemical Laboratory. Together with the analysis will be found a table showing the quantities of the more important constituents removed by 1,000 coconuts from the soil. A. BAUR.

THE CEYLON MANURE WORKS.

ANALYSIS OF THE COCONUT.

	Husk.	Shell.	Kernel.	Milk
Total weight in lb.	2·702	0·546	0·875	0·593
,, in %	57·28	11·59	18·54	12·58
* Moisture in %	65·56	15·20	52·80	..
* Dry matter in %	34·44	84·80	47 20	..
Pure ash in %	1·63	0·29	0·79	0·38
Containing, viz.:—				
Silica Si O2	8·22	4·64	1·31	2 95
Oxide of Iron & Alumina Fe2 O3 Al2 O3	0·54	1·39	0·59	trace
Lime CaO	4·14	6·26	3·10	7·43
Magnesia MgO	2·19	1·32	1·98	3·97
** Potash K2 O	30·71	45·01	45·84	8·62
Soda Na2 O	3·19	15·42	..	..
** Potassium chloride KC1	..	..	13 04	41·09
Sodium chloride NaC1	45·95	15·56	5 01	26·32
Phosphoric acid P2 O5	1·92	4·64	20·33	5·68
Sulphuric acid So3	3·13	5·75	8·79	3·94
	100·00	99·99	99·99	100·00
** Containing total potash K2 O	30·71	45·01	54·05	34·54
* Containing nitrogen N	0·137	0·100	0·504	..

Thus, of the more important ingredients of the soil, 1,000 nuts remove the following:—

in lb.	Husk.	Shell.	Kernel.	Milk.	Total lb.
Nitrogen N	3·7017	0·5460	4·4100	..	8·6577
Phosphoric acid P2 O5	0·8456	0 0735	1·4053	0·1279	2·4523
Potash K2 O	13·5255	0·7127	3·7362	0·7783	18·7527
Lime CaO	1·8234	0·0991	0·2143	0·1674	2·3042
Sodium chloride NaC1	20·2375	0·2464	0·3563	0·5431	21·4233

INDIAN TEA ASSOCIATION.

Abstract of proceedings of a meeting of the General Committee held on 31st October, 1899. Present: Messrs. H S Ashton (Chairman), H C Regg (Vice-Chairman), W Brown, A C Lawrie, R Magor, M R Quin, A Tocher, and T Traill, Mr. R R Toynbee was absent from Calcutta.

Proceedings of the last meeting of the Committee, held on the 3rd October, having been approved in circulation, was confirmed. Proceedings of the Assam Branch of the Association for the month of September were to be recorded. Letters of 22nd and 29th September, and 6th and 13th October, from Mr. Ernest Tye, Secretary, Indian Tea Association, London, were brought up, after previous circulation for final consideration. The principal matters to which Mr. Tye referred in these letters were :—

(a) *Bonded Warehouse Charges in London.*—With his letter of 22nd September, Mr. Tye enclosed copy of a letter dated, 21st September, addressed by the London Committee to the Tea Clearing House Committee in reference to this question. In this letter the London Committee laid stress on the onerous nature of the charges levied upon teas by the warehouse proprietors, and strongly urged that substantial reductions should be made. In his letters of 6th and 13th October, Mr. Tye referred at length to the General Committee's letter, No. 561-O. of 13th September, in which the whole question of the warehouse charges was fully discussed. He stated that a Special Sub-committee of the London Branch of the Association had been appointed for the purpose of negotiating with the Tea Clearing House Committee with a view to a reduction of charges. The London Committee had also considered the question of the organization of opposition warehouses on the principle of co-operation. It was pointed out that this principle had been adopted for some years by several of the largest London tea Companies who had subscribed capital for the purchase of Butler's wharf. Other warehouses might be established on the same principle; and possibly a license might be granted by the Customs authorities if the combination were sufficiently strong to guarantee, say, two hundred, or two hundred and fifty thousand chests. If the warehouse were not in a position to offer the facilities provided by the Tea Clearing House, there would be a difficulty with the tea trade; but this might be met by either purchasing or hiring one of the existing bonded warehouses. If, in raising the requisite capital, the amount subscribed by each shareholder was approximately in proportion to the quantity of tea sent by him to the warehouse, the rates could be fixed on any scale, because it would be the same thing to the shareholders whether they received the benefit of their co-operative working in the shape of low charges, or as a return in the shape of profits. Companies selling their teas in Calcutta would, however, be unable to control the warehousing of their produce on arrival in London. Precautions similar to those taken on boardship to prevent contact with other produce have to be taken in the warehouses. This necessitates separate buildings; consequently a warehouse which could depend upon a full supply of tea would be at a considerable advantage compared with one which could only utilize a portion of its tea space and could get no return from the balance. For this reason the London Committee believed that some of the existing warehouses had difficulty in working to a profit.

The question was considered by the Committee, and the Secretary was directed to address the London Committee again in regard to its urging them to bring matters to a definite issue. In this letter attention was to be drawn to the suggestion made in the General Committee's letter of 13th September that a scheme for establishing co-operative warehouses should be formulated in London, an enquiry was to be made as to whether it was proposed to devise such a scheme, and it was to be recommended that this should be done.

The Secretary was also directed to write (in continuation of his letter No. 569-O. of 14th September) to the twenty-six Calcutta tea companies named in the proceedings of the meeting held on the 15th September. In this letter the remarks made in the letters from the London Committee were to be incorporated, and it was also to be stated that they were again being addressed on the subject in further reference to the establishment of co-operative warehouses.

(b) *Area of Tea under Cultivation.*—With his letters of 22nd and 29th September and 13th October, Mr. Tye forwarded copies of correspondence between Mr. J E O'Conor, C I E, the Director-General of Statistics, Mr. A G Stanton of Messrs. Gow, Wilson and Stanton, and himself in regard to the difficulty of obtaining accurate returns of the area under tea in several districts in India. Mr. O'Conor drew special attention to the case of Travancore. In that district the total area under tea was returned as 30,076 acres in 1897, while in 1898 it was given as 19,634 acres. On the other hand the outturn was given in 1897 as 2,545,913lb. while in 1898 it was returned as 8,413,860 lb. Mr. O'Conor also stated that 84 gardens in Assam had withheld the information for which they were asked in connection with the matter. The London Committee suggested that the Association in Calcutta should give all the assistance possible to Mr. O'Conor in order to enable him to procure more reliable figures.

The question was discussed, and it was pointed out that it had engaged the attention of the Committee in connection with the Report issued by the Director-General of Statistics on the 1st Novem- 1898. Some correspondence had ensued between the Statistical Bureau and the Association, with the result that it had been suggested to the Director-General, that if practicable, before publishing the figures in his next report, he might place them before the Committee for verification. No reply had been received to this letter and it was accordingly decided to write to the Director-General of Statistics pointing this out; and stating at the same time that the Committee would glad to do everything possible to procure more accurate returns. It was also to be suggested that the names of the 84 Assam gardens referred to should be furnished, as it would be difficult for the Committee, without that information to take any steps in regard to them.

The Secretary was also instructed to address the United Planters' Association of Southern India and the Planters' Associations in Travancore, drawing their attention to the mattter and laying stress on the importance of reliable statistics being furnished to Government in all cases.

The Chairman undertook to interview Mr. O'Conor in regard to the question.

(c) *Scientific Officer.*—It was stated in the letter of 13th October that the London Committee had again considered this question. In view of Mr. Kelway Bamber's re-engagement with the Ceylon Association, they asked for the views of the General Committee as to whether a scientist should be selected in England. The Chairman of the Association in London had undertaken to make enquiries, and the necessary arrangements would be made by the Committee there if desired.

The matter was considered, and on reference being made to the replies received from the various local Associations to the Committee's Circular letter No. 31822 O of 12th June, it was seen that a majority were in favour of the engagement of an agricultural chemist.

The Committee were also of this opinion, and it was accordingly decided to write to the Association in London, stating that their offer to select a scientist in England had been accepted, and asking that enquiries be made at once regarding an agricultural chemist. It was also to be pointed out that it would be necessary to consult the Government of Bengal and the Administration of Assam before anyone was finally engaged.

Considered file of papers in connection with the Bill to consolidate and amend the law relating to emigration to Assam which was introduced into the Imperial Legislative Council on the 13th October. Copies of the Bill had been forwarded to the Assam and Cachar Branches for their consideration. The Assam Branch had arranged for a special meeting of members in November to discuss the Bill, and steps were, it was understood, also to be taken in Cachar for the due consideration of the measure. Mr. Buckingham, C I E., Chairman of the Assam Branch, had been appointed by the Government of India as an Additional Member of the Imperial Council to participate in the discussion of the measure. The Committee then proceeded to the formation of a Special Sub-Committee to examine and report upon the provisions of the Bill. It was agreed that the Sub-Committee should consist of five members and Mr. Begg and Mr. Magor accepted seats upon it. It was further agreed to ask Mr. A Topping, of Messrs. Macneill & Co., Mr. W Warrington, of Messrs. Finlay Muir & Co., and Mr. C de C Richards, of Messrs. McLeod & Co., to act. A letter of 20th October from the Chairman of the Assam Branch upon certain of the provisions of the Bill, and a letter of 24th October with enclosures from Messrs. Begg, Dunlop & Co., were to be referred to the Sub-Committee for their consideration. Considered letter of 28th October from Messrs. Shaw, Wallace & Co., covering papers in original in regard to a case in Cachar in which an application had been made under Act XIII of 1859 for the arrest of certain absconded coolies. The Magistrate had refused to issue warrants for the arrest of the coolies on the ground that the advance of one rupee made under each contract was not sufficient to make the contracts binding. Messrs. Shaw, Wallace & Co. stated that it appeared to be a custom on many gardens to make an advance of only one rupee, deducting the sum at the termination of the contract. There appeared to be no decision of the High Court upon the point and they thought it was a question upon which the Association might obtain a legal opinion. After some discussion the Secretary was instructed to forward the papers to Messrs. Sanderson & Co., the Solicitors to the Association, with a request for an expression of opinion upon the points in question. Considered letter No. 4,491-T., of 27th October, from the Director-General of Telegraphs, in reply to the Committee's letter No. 611-O., of 10th idem, in regard to telegraphic news for the mofussil. With the last-named letter, the Committee forwarded a letter of 2nd October, from Mr. J. Buckingham, C.I.E., the Chairman of the Assam Branch, suggesting the establishment of a regular system of wiring the latest telegraphic news to Assam. Mr. Buckingham estimated that at least forty stations in the Assam Valley alone would be only too glad to avail themselves of the opportunity of getting the latest telegraphic communication, provided they had not to pay deferred rates. He proposed that for all telegrams conveying English or Indian news, "press" rates only should be charged. This proposal was supported by the Committee in their covering letter.

In his reply the Director-General of Telegraphs stated that he was not empowered to grant the concession asked for. He, however, drew attention to Rule 109 and footnote, Section 11 of the *Telegraph Guide*. He pointed out that under that rule if in any district served by a telegraph office, whether by hand or postal delivery, four subscribers combined, and desired each to be provided with a copy of a telegram containing a summary of news, the cost to each subscriber would be practically the same as that of a telegram addressed to each subscriber at press rates. If more than four subscribers desired copies, the cost to each would be less than press rates. Such telegrams would have to be drawn up and sent by an agent independent of the Telegraph Department.

The Secretary was instructed to forward a copy of this letter to Mr. Buckingham, with a request for his opinion upon the proposal referred to by the Director-General of Telegraphs, and asking whether the Committee could do anything more in the matter.

H. S. ASHTON, Chairman.

—*Indian Planters' Gazette*, Nov. 11.

THE COMING FIBRE INDUSTRY.

There can be little doubt, judging from present appearances, that the profitable growing of agaves for the production of fibres in India is merely a matter of time. A few years back little was known in this country concerning these plants and their great economical value. Thanks to "Forester" and others they have, during the last few years, been brought prominently forward, and now that a machine is invented which can be worked by a couple of natives after a few hours' practice and turn out fibre at the rate of 1½ tons per hour, there is every prospect that during the next few years we may have an industry which may rival in dimensions that of the Bahama Islands themselves. Although a good deal of information upon the subject has been furnished from time to time to the press, there are still a large number of enquirers into such details as to the very best agave to grow, the probable cost of planting, yield per acre, &c. As I have for the last five years given considerable attention to the subject with the view of planting up waste land, perhaps a few of the facts regarding the cultivation of the plant may not come amiss at a time when a great many zemindars and planters are seeking information on the subject.

THE AGAVE GENUS.

There are numerous species of the agave genus, and they are nearly all *monocarpic perennials*, that is they grow on for an indefinite number of years producing leaves only and then flowers. They only flower (poll) once in their lives as when they flower they die. The usual period between the very young state and the throwing up of their flowering poll is between seven and fifteen years, but this would appear to entirely depend on the nature of their environment.

SISAL HEMP.

Sisal hemp is produced by more than one species of agave, but one recognised as producing the very best agave fibre is *Agave rigida* var. *sisalana*. This is the species which has been introduced into this country, and considerable care has been taken to import only the true variety. *Agave sisalana* is the name that Dr. Perrine gave to the plant known to the natives of Yucatan as Yaxci. Another variety cultivated in Yucatan is named *Agave rigida* var. *longifolio*. This variety produces equally as valuable

a fibre as the one known as *sisalana.* As a matter of fact tbey are the same plant in every particnlar, with the exception that *longifolio* is armed with side teeth which renders it more difficult to handle and cannot be conveniently planted so closely as the *sisalana* variety, which is wholly, or almost wholly, destitute of side teeth, and only armed with a sharp spine at the point of the leaf. There are several other varieties of the *rigida* type cultivated in Yucatan, and also some varieties of the *Furcroyas* and the fibre all goes nnder the name of *Sisal.* But although the produce of these different plants go under this name in the market, they are of different value, and the fibre of *Agave rigida var sisalana* is now recognised by experts as prodncing the very best agave fibre for white ropes, and which is only second to real Manilla hemp itself, and some assert that in some instances it is even superior and commands a better price than the latter.

One of the Kew papers upon vegetable fibres states that in the report on fibre plants by the late Director of the Botanical Department, Jamaica, it is mentioned that with regard to the value of *Agave rigida* and its allied forms as the sources of the sisal hemp of commerce, there were two important points deserving attention. The first was the nniversal increasing demand which exists in all countries for this fibre; and the second was the drought-enduring character of the plant and the simple and economical treatment which it requires at the hands of the cnltivator. It has been stated that in regularly-planted areas there shonld be 400 plants to the acre; bnt it should be pointed out that this statement applies to Yucatan, where the majority of the plants under cultivation are fully armed with side teeth and cannot be planted closely. The selected variety, which was named *sisalana* by Dr. Perrine can be planted very much closer, and it is said by those who have tried this varicty in India that 6 feet between the plants in the row and 8 feet between the rows gives ample room for the full developement of the leaves which can be easily harvested owing to their being unarmed. Young plants from 1 foot to 2 feet high when planted commence to yield in the fourth year. It has been stated that the same plants continue to yield for fifty or sixty years. It may be said at once that no reliance should be paid to such a statement. Their yielding period is between their fourth year and the time they flower, and that period may only be four or five years, and it may extend to twelve or fifteen years. The great rule to be kept constantly in practice is to plant a young sucker whenever a plant commences to yield leaves. The leaves of the older plant will in no way interfere with the growth of the younger one underneath, as whenever the leaves of the big plant come down to a horizontal position they are ripe for cutting, and the leaves left on are always more or less pointing upwards. Where young plants are planted for the first two or three years they will grow suckers from their roots. These ought to be always removed, as they take strength from the parent plant. If they are pnt in a nursery by themselves they will always be there ready to plant when reqnired. If this supplying rule be strictly observed there can be no reason why a plantation will not last twice fifty or sixty years, as the agave is really a "scrub jungle," and the roots of plants which have polled are in a continual state of decay, and by adding humns to the soil through the process is really one of Nature's land reclaimers.

To give some idea of the probable returns from a sisal hemp plantation it may be stated that each plant from 4 to 5 years old is found to yield on an average 25 to 35 leaves per annum, and tbese leaves will give 1½ lb. of clean fibre; this amount has been actually got by *hand* clearing, from leaves grown upon waste land in Assam. Eight hundred plants to the acre of the smooth-edged *sisalana* variety will not prove a single plant too many, and this would mean 1,200 pounds of clean fibre to the acre. This may be taken as a fair calculation; much depends upon how the plantation is planted and the details of management.

COST OF GROWING.

The actual cost of growing and preparing the fibre would naturally vary according to the locality in which the plantation was situated, but in any part of India it must be very much cheaper than it is in the West Indies, where the price of labour is so mnch higher. The land upon which the agaves are grown in Yucatan is of a gravely, stony and in some places of rocky character, and they thrive best and give most fibre in comparatively arid districts. Moist or rich land is considered unsnitable, and it has been proved in this country tbat, although the plants grow lnxuriantly upon such lands, the yield of fibre is comparatively small and of less strength than it is when grown upon what is usually called barren or useless land.

HARVESTING.

The proper time to harvest the leaves is when they have nearly come down to a horizontal position on the rosette. But the leaves take no harm if they are left on the plant for three months after coming to this position so long as they are cut before they commence to turn yellow, as after this the fibre is apt to be discoloured which detracts from its appearance and consequently its value. As the leaves are not ripe till they come down to the horizontal position or nearly so, it is always the outer leaves whioh are cnt first. The leaves are cnt and made into bundles of 50 each, and 30 such bnndles is reckoned a fair day's task when carried ont to the edge of a oart road. The machine should be plaoed near a supply of water, and one machine (of the latest invention) is ample for 200 acres. After the fibre has passed through the machine, it is hung np in the snn and thoronghly dried, but care must be taken that none of the green juice is left on the fibre when exposed to the air, or it is bonnd to be discoloured. If a high degree of whiteness is desired it is left ont all night to bleach and during next day carefully turned. The fibre is made into bales by means of a screw press, and great care is taken to have these bales as tidy as possible, and the fibre ought to be kept straight in the bales. Proprietors of gardens are reticent of risking money in experiments, but, as far as can be judged from the data available, those who have land lying idle npon which they have to pay rent will be consulting heir own interests by giving this indnstry their careful study and attention—L. in *Calcutta paper.*

THE BRITISH TEA-INDUSTRY: A REPLY TO "SUUM CUIQUE."—An excellent reply to the letter of "Suum Cuique" appears on page 418, and a notable suggestion is made for the keeping ot prices up to a proper level. It is surmised that if a body of proprietors (including Companies) could be formed, each subscriber subscribing according to his property, to enable prices to be maintained at a high level when the downward tendency became marked, such prices would not sink. The qualifications of the "Planters' Protection Society," as it is named, are further detailed; and it is shown that this body could withhold supplies when there was a rush of imports, and sell them again at a profit when deliveries became lighter. Some pungent remarks on Warehouse Charges are also made, and we commend these to the attention of the Planters' Association, which we yet hope to see directing its main attention, ten days hence, to this topic, while submitting the Tea-Duty *pro forma* for discussion as invited by our Indian friends. "Director" shows some of the difficulties of the attack. Will not some planter's ingenuity come to the rescue with a plan of campaign?

CEYLON LAND AND PRODUCE COMPANY LIMITED.

ANNUAL REPORT.

Report of the Directors, submitted to the fifteenth annual general meeting of Shareholders held at the Registered Office of the Company, Leadenhall House, 101, Leadenhall Street, London, on Monday, the 13th day of Nov. 1899 :—

Your Directors have the pleasure to submit the Annexed Profit and Loss Account and Balance Sheet for the Crop year ending 30th June, 1899, duly audited.

The amount at credit of Profit and Loss Account is £11,978, 11s 10d, which, with the sum of £321, 12s brought forward from last year, leaves £12,300, 3s 10d to be distributed.

On the 22nd July last an Interim Dividend of 7½ per cent. on the ordinary Shares and 3 per cent. on the Preference Shares was paid, and your Directors now propose to pay on the 15th day of December, 1899, the balance of the fixed Cumulative Dividend on the Preference Shares (3 per cent.) making 6 per cent. for the year, and 7½ per cent. on the Ordinary Shares, making 15 per cent. for the year, and in addition, a bonus of 5 per cent. on Ordinary Shares—all free of Income Tax. It is also proposed to transfer £4,000 from Profit and Loss Account to Reserve Fund, increasing that account to £17,500, and carry forward the balance of £1,532 16s, subject to the Directors' remuneration for the year under review, and to the payment of Income Tax, &c.

In accordance with a Resolution of the Board, a call of 10s per Share was made upon all Members holding Preference Shares upon which only £3 10s had been paid, and the same was payable on the 30th March, 1899.

Your Directors regret that owing to unfavourable weather the total crop of Tea fell short of the quantity estimated, though the intake slightly exceeded that of last financial year. It will be observed on reference to the Statistics herewith that the plucking area was increased from 1,676 to 1,754 acres. Your Directors, however, desire to point out that this additional acreage was only in partial bearing.

With regard to Cocoa, your Board are pleased to note that the Estimates were exceeded, though, owing to the wet weather prevalent when this product was being prepared for Market, a lesser percentage of "good red" kinds was obtained.

A welcome rise in the price of Tea has been recorded, whilst freights have ruled on the average somewhat lower than during 1897/98. Average Cocoa values, for the reason above stated, are less than last year.

Your Directors desire to inform the Shareholders that during the past three years the total expenditure on Manure and its application amounted to over R60,000, the whole of which has been charged to Revenue.

It is a source of gratification to your Directors that, though the cost of production tends to increase by reason of the higher rate of exchange plus a more liable cultivation, they are able to assure the Shareholders of the continued prosperity of the Company, and they are of opinion that the outlook for the future is bright.

TEA.—At the beginning of the year the quantity available for shipment to Great Britain for 1899 was estimated in Colombo at 93 million lb. against rather over 96 million lb. actually exported in 1898. So far as can be judged at present, the amount sent to this country during the current year will not exceed that of the for going one, and the Indian crop being also likely to prove of moderate dimensions, the statistical position of all Tea may be considered satisfactory, especially in view of the larger de iveries which have been going on recently, both for Home and Foreign use.

A check was given to business by the dispute which arose in the early part of the summer, between Importers and the Trade, regarding the 1 lb. draft, and Public Sales were virtually suspenpended in consequence for three or four weeks. This caused some accumulation of Imports, which however have now been about worked off, and the Auctions are rapidly resuming their normal size.

Prices ruled above those of 1898 for the first six months of this year, but latterly have not been quite so favourable. For the 964,500 packages passed through the Mincing Lane Sale Rooms from 1st January to 31st ult. the average is 8d per lb., compared with 7⅘d. per lb. in the corresponding ten months of 1898 for 984,300 packages.

During the spring months quality, as is usually the case, shewed a falling off, many of the Teas being deficient in strength and flavour. Later on a general improvement was manifested, and some very desirable invoices were received which attracted considerable attention.

That the use of Ceylon Tea in other countries than Great Britain is growing, is evidence by the shipments from London to outside quarters, and as will be seen by the undermentioned figures, business direct from Colombo with Russia, America and Australia, for the first nine months for the year, marks an increase.

1899.	1898.	1897.
TO AUSTRALASIA.		
11,967,000 lb.	11,259,000 lb.	9,524,000 lb.
TO RUSSIA.		
2,719,000 lb.	1,915,000 lb.	325,000 lb.
TO AMERICA.		
2,344,000 lb.	1,870,000 lb.	707,000 lb.

COCOA.—The marketing of this article has been subject to many peculiarities this season, mainly attributable to the effects of unfavourable weather on the greater portion of the Crop, which has given a larger proportion of inferior and ordinary kinds than in any previous season. The effect of this was shewn in the scarcity of good and fine red parcels almost throughout the entire Crop, and in consequence, there was a considerable rise in the price of the finer grades, with a corresponding decline in those for the less desirable kinds, the result being that the general average is at a lower level. At the same time it may be pointed out that higher prices have been obtained for really well-prepared lots than for the past few years. Manufacturers generally are becoming more favourably impressed with this growth, and the increasing consumption is more than sufficient to deal with any likely large increase in the production of the island. Your Directors look favourably upon the future of this article. The out-turn of the Company's Crops was, as stated above, affected by the weather, and was much below our usual high standard of quality, but in the realisations full advantage was taken of the exceptional Market movements.

Acreages.—The following Statement shews the approximate acreage of the Company's Properties at date :—

Name of Estate.		Tea. 1 yr.	2 yrs.	3 yrs.	4 yrs. & over.
Alloowiharie Group	..	—	117½	50	47
Andangodde Estate	..	—	16¼	39¼	120¾
Fetteresso Estate	..	5	—	—	405
New Peradeniya Estate	.	—	1¾	—	384¾
North Matale Group	..	18	13	61	315
Owella Estate	..	—	40	28	30
Rickarton Estate	..	—	12	23	503
Strathisla Group	..	58	48	114	—
Forest Land	..	—	—	—	—
		81	248½	315¼	1,805½

2,450¼

	Cocoa. Bearing.	Not Bearing.	Coffee, &c.	Forest Grass, Chena, abandoned, &c.	Total Acreage.
Alloowiharie Group	263	84	116¼	15	692¾
Andangodde Estate	—	—	—	—	176¼
Fetteresso Estate ..	—	—	—	28	438
New Peradeniya Estate ..	17½	—	—	54½	458½
North Matale Group	721	10	85	354	1,577
Owella Estate ..	—	117	—	242	457
Rickartou Estate ..	—	—	—	58	596
Strathisla Group ..	3¾	170¼	—	44¾	438¾
Forost Land ..	—	—	—	430	430
	1,005¼	381¼	201¼	1,226¼	5,264¼

1,386½

N.B.—Coconuts are planted through Tea, Cocoa and Coffee. In the absence of detailed surveys these figures, as mentioned above are approximate only.

Your Directors greatly regret having to inform the Shareholders of the death of Wm. Keiller, Esq., and Sir N. A. Staples, Bart. The vacancies thus caused have been filled in accordance with the Articles of Association by Alex. D. Wilson, Esq., of Messrs. Chapman, Wilson & Co., 23, St. Mary Axe, E.C., and Lewis A. Lewis, Esq., of Messrs. Lewis and Noyes, 14, Mincing Lane, E.C.

The prospects of the Tea crop for 1899/190 are so far, favourable, the intake to 30th September being in excess, as compared with the Crop at same date last year. Your Directors hope that the Estimates of Cocoa will be realised, but at the moment it is practically impossible to speak with any certainty.

Your Directors have decided to issue the balance of the 6 per cent. Cummulative Preference Capital, viz., 2,150 Shares of £5 each, at a premium of 12s 6d per Share, and the attention of the Shareholders is drawn to the Secretary's Circular accompanying this Report.

Mr. Alex. D. Wilson, by rotation, retires from the Directorate, but being eligible, offers himself for re-election.

Mr. James B. Laurie, the Auditor, also retires, but he is eligible, and offers himself for re-election.

James Wilson, *Chairman*. Alfred E. Lock, *Secretary*.

(CIRCULAR ACCOMPANYING REPORT.)

Dear Sir or Madam,—I am desired to inform you that by Article No. 6 of the Company's Regulations, it is provided that—

"The Capital of the Company is One Hundred Thousand Pounds, divided into Twenty Thousand Shares of Five Pounds each, where of Ten Thousand are Preference Shares, and Ten Thousand Ordinary Shares. The Preference Shares are and shall be entitled to receive out of the profits of each year a Cumulative Preferential Dividend of £6 per centum per annum on the Capital paid up thereon, and no more than such Dividend and the surplus profits of each year shall (subject to the right to create a reservo fund) be divided in payment of Dividends on the Capital paid up on the Ordinary Shares."

I am further desired to point out that on the 30th June, 1893, the Company had in its possession a total area of 4,554 aores, out of which 2,780 were under cultivation at the then book cost of £96,958. At the cose of last financial year 3,836 acres in all had been planted up, excluding the area under Coffee, and the total extent increased to 5,264 acres, the book cost being £116,414—in other words, during this period a sum of £19,456 has been added to Capital Account, the major portion of which (£17,500) will have been provided out of the profits of the Company.

In view however of the further expenditure needed to bring the olearings into full bearing, and to provide for the building and equipping of Tea Factories to be erected on the Strathisla and Alloowiharie Groups, the Direotors beg to offer to the Preference Shareholders, in proportion to their present holdings, the balance of the unissued 6 per cent Cumulative Preference Capital, viz., 2,150 Shares £5 each, at a premium of 12s 6d per Share. * * *

The amount due in respect of the Shares will be payable in instalments as follows, viz :

On 1st December, 1899 .. £1 10s 0d per Share.
1st January, 1900 ... £1 10s 0d "
1st February 1900 .. £2 12s 6d " (including premium).

The Dividend at the rate of 6 per cent per annum will accrue as from dates of payment ; pre-payment of the whole sum will be accepted, the Dividend being calculated at the rate of 6 per cent per aunum also.

Interest at the rate of 7½ per cent will be charged on instalments, after thcy become due, during the non-payment thereof. Failure to pay any instalment will render the previous payments liable to forfeiture. Interim Dividends are generally payable in July, and Balance Dividends in December.

I am, &c., Alfred E. Lock,
Secretary.

STATISTICS FOR PAST 10 YEARS.

TEA.

Year ending 30th June.	Acres of Tea in bearing.	Crop, lb.	Average per acre lb.	Teas made for others, and from purchased Leaf, lb.	Net Av. per lb. realised for all Tea sold in London. d.	Rate of Exchange. s. d.	Rupee Cents.
1890	1131	354,842	314	286,292	9·46	1 5½	54·06
1891	1345	480,684	358	357,648	9·10	1 6	48·61
1892	1385	503,293	364	479,005	7·81	1 4¾	46·63
1893	1406	589,192	419	528,172	7·70	1 3	51·33
1894	1451	608,110	419	342,040	6 77	1 2½	46·68
1895	1556	597,399	384	435,908	7.34	1 1¼	55·40
1896	1556	694,720	446	590,111	6·80	1 2	48·57
1897	1571	748,994	476	432,652	6·51	1 3	43·40
1898	1636	753,151	460	393,360	6·22 6·27*	1 4	38·88 39·19*
1899	1754	754,768	430	281,457	6·75 6·78*	1 4¼	41·54 41·72*

* Including Sales made in Colombo.

COCOA.

Year ending 30th June.	Crop cwts.	Net Average per cwt. s.	d.	Highest price realised. s.	d.	Dividend: Preference. per cent.	Dividend: Ordinary. per cent.
1890	1224	95	11	115	—	6	10
1891	1355	108	—	129	6	6	10
1892	1431	96	5	120	—	6	15
1893	2201	90	11	130	9	6	15*
1894	1212	58	4	83	—	6	15
1895	2840	52	9	65	6	6	15*
1896	2335	56	8	80	—	6	15*
1897	2266	66	1	85	—	6	15*
1898	2523	68	3	80	—	6	15*
1899	2594	66	3†	86	—	6	15*

† Estimated. * And 5 per cent. Bonus.

NORTH BORNEO TRADING COMPNAY (LIMITED.)

Here is a report from *The Times* of a Company in which we, in Ceylon, should take some interest, in view of its pioneering with "rubber":—

The second ordinary general meeting was heldat Winchester-house. Mr. A. J. Scrutton presided, and, in moving the adoption of the report, said that he would leave it to Mr. C. P. Bennett, the managing director, to explain the present position and the prospects of the company. Mr. Bennett, who seconded the motion, stated that they had 103,500 acres of land, which stood in the balance-sheet at 12s per acre. There could be no doubt that the land, which was located round the Bay of Sandakan, was some of the finest in Borneo, and as it was held for a period of 999 years it might be regarded as practically freehold. The total outlay on the development of their estates was £1,241 in the period covered by the accounts—from July 1, 1897, to December 31st last. Of this amount £723 was for rubber cultivation on the Sekong plantation. He rather hoped to see this item still larger in the next balance-sheet, because if they got good rubber they would obtain very satisfactory results from the investment. The 27,050 shares, credited with 8s paid up, which appeared in the balance-sheet as unallotted, had, since December 31st last, been applied for and issued. On the whole, he thought that the shareholders should be satisfied with the gross profit of £2,694, seeing that, during the first six months of the period covered by the accounts, no business was being done. Mr. Roberts, the manager, was in England, and the work of reconstructing the old company was being carried out. Judging by the figures received lately from Mr. Roberts, he believed that the accounts for 1899 would show much better results than those now presented. On the 10th ult., the board were informed that China was now prepared to take more timber than the company could ship, so that they were not exactly in the position of having to seek for fresh markets. However, a good look-out was being kept for other markets in the East, and only lately they concluded a contract for 20,000 cubic feet of timber for Manila, and other orders could be had almost for the asking on favourable terms. They had succeeded in overcoming the shipping difficulties which stood for a long time in the way of the company's progress, and he expected that there would be a considerable increase in their output in the immediate future. Their company, and he believed, all the other Borneo trading companies were now receiving every consideration on the part of the Chartered Company. The motion was unanimously adopted.

TRAVANCORE TEA SALES.

Average 8·64d. November 10th.

Garden.	Total. Quantity.	Aver. Price.	Bro. Or. Pek. or Flowery Pekoe. Quantity.	Price.	Pekoe and Unassorted. Quantity.	Price.	Bro. Pekoe. Quantity.	Price.	Pekoe Sou. Quantity.	Price.	Broken and Souchong. Quantity.	Price.	Fannings, Dust, and Various. Quantity.	Price.
Travancore ...	1058	7·10												
Ashley ...	120	6¾	—	—	70	6½	47	7	—	—	—	—	3	6
BA ...	3	6½	—	—	—	—	—	—	—	—	3	6½	—	—
Balamore ...	74½c	6¾	—	—	50½c	6½ 6¾	21½c	7¼	—	—	2½c	5¾	1½c	5½
Bon Accord ...	133 p	7	—	—	50	7	44	7½	22	6½	—	—	17½c	6 6¾
CMR ...	9	6¾	—	—	6	6½	3	7¼	—	—	—	—	—	—
Corrimony ...	140½c	7¾	—	—	92½c	7¼	43½c	†8¾	—	—	3½c	6¼	2½c	5¾
Glenmore ...	85½c	6¾	—	—	59½c	6¾	24½c	7	—	—	1½c	5¾	1½c	5½
ME ...	11	6¾	—	—	6	6¾	—	—	—	—	5	6½	—	—
Merchiston ...	56 p	7	18½c	7	24	6¾	11½c	7½	—	—	—	—	3½c	6
P ...	22 p	6¼	—	—	12½c	6¾	—	—	—	—	10	6	—	—
Poonmudi ...	88 p	7¼	11	7¼	97	6½ 6¾	17	8¾	13	6½	4	6 6¼	4½c	6¼
Riviera ...	60	6¼	—	—	50	6¼	9	6¾	—	—	1	5¾	—	—
Seafield ...	147½c	7½	—	—	90½c	7¼	55½c	†8¼	—	—	1½c	6	1½c	5¾
Sth Trav Co Ven...	96	7¾	—	—	49	7½	41	8	—	—	—	—	6	6¼
W ..	14½c	7½	—	—	14½c	7½	—	—	—	—	—	—	—	—

In these tables all packages are chests unless otherwise stated. ½c for half-chests; p for packages; prices marked thus † represent the highest offer in the room. In calculating these averages two half-chests or four boxes are takes as equal in weight to one chest.

PRODUCE AND PLANTING.

TWADDLE ABOUT TEA.

The fact that the consumption of tea is increasing rapidly in the United States is perhaps the chief reason why certain people whose hobby it is to attack everything that is popular hasten to assert the danger of tea drinking. One of the latest diatribes against tea is attributed to Dr. Kellogg, the founder of a sanatorium at Battle Creek, in Michigan. Tea according to this investigator, is a

most dangerous drug. He tells of servant girls arrested in the streets of Boston for being drunk and disorderely who had tasted no alcohol, but who had "chewed tea constantly"; also, of an old lady in Minneapolis who drank thirty or forty cups a day and ended her life in a lunatic asylum. But even worse than these cases are those in which tea plays a more silent and insidious part. Among women it produces a kind of mania, "the mania for acting the persecuted saint. Among men, unlike the much condemned alcohol, it produces fear. One patient who was suffering from tea poisoning in this way never passed a high building without looking up to see if something was going to fall upon him. Then the relentless Dr. Kellogg goes on to argue that tea is responsible for sleeplessness, and, in fact, most of the ills which flesh is heir to. We have heard all this so often that it has ceased to be funny. There is another kind of mania than that produced by drinking tea, and it appears to be brought on by the knowledge that a number of people drink tea in moderation and find pleasure and comfort in doing so.

Russian Grown Tea.

The Official report as to the results of the tea crops on the experimental tea plantation in Tchakva, near Batoum, shows that all the three crops collected produced exceedingly good tea. The Commission appointed to report classfied the tea under two qualities, and came to the conclusion that the first sort could be sold retail at two roubles a pound. As the best Russian tea is sold at two roubles eighty copecks a pound, the two-rouble tea corresponds to tea at about 2s 3d in Mincing Lane. The Tchakva tea was appraised more highly because was it was manufactured on the Indian and Ceylon method rather than the Chinese.—*Home and Colonial Mail*, Nov. 10.

SOUTH INDIAN PLANTING NOTES.

Ootacamund, Nov. 25.—Mr. Barber, Government Botanist, is under orders to proceed to Vizagapatam to report on the sugar-cane disease, which is prevalent in that District.—*Madras Mail*, Nov. 28.

Coorg Planting Notes.—Nov. 24.—Crops began to ripen up early this season owing to the early blossom last February, and some fly-picking was done towards the end of October; but no full picking was commenced till the middle of the current month. Every care is being exercised the whole country over in the curing of the coffee, for which there is more opportunity with the present small crops than when, like last season, crops are large and things have to be done at high pressure. There is every reason to hope that Coorg coffee of this season's growth will go a long way to re-establish its reputation for quality which it had so largely lost last season. The samples of beans already gathered are very fine. There has been a better demand for East Indian coffees in the London market lately.—*Madras Mail*, November, 28.

WYNAAD PLANTERS' ASSOCIATION.

The following extracts are from proceedings of a General Meeting held at Meppaddi, on the 8th instant:—

Coffee Robbery.—Read letter from the Superintendent of Police, Calicut, asking for information as to the best time to send up the extra constables to prevent the theft of coffee. Resolved, that the Superintendent be thanked for the trouble he has taken in the matter, and that he be informed that the Association considers that the 1st November would be the best date on which to send up the constables.

U. P. A. S.—(1) Paris Exhibition.—A subscription list towards the Paris Exhibition Fund was circulated; the total amount collected came to R645. (2) The Secretary was requested to ask the Secretary, U. P. A. S. I., for a copy of the draft of the new labour ordinance; and the Committee were asked to meet to discuss it at the earliest opportunity.

Alleged Cooly-Crimping.—Read copy of letter from the Ceylon Labour Federation re-alleged crimping from Ceylon. Proposed by Mr. R. Lamb, seconded by Mr. M. D. Taylor, that this Association point out that it is not within its province to interfere in the matter referred to by the Secretary of the Ceylon Labour Association in his letter to the U. P. A. S. I., dated 13th September, 1899.—*Madras Mail*, Nov. 28.

ROADSIDE FRUIT IN EUROPE.

The cultivation of fruit trees along the highways of France is being extended each year. The Government having first set the example, the communes in certain departments adopted this practice as a source of revenue, so that now roadside fruit cultivation has become an important branch of national industry. It is not, however, only in France that fruit trees have been planted along the roadside. The United States Consul at St. Etienne says that in Germany, Belgium, and the Duchy of Luxemburg, the system has been greatly developed, giving satisfaction to the State as well as to local interests. On the Wurtemburg roads, for instance, the fruit harvest from this source produced in 1878 over £40,000, and last year the returns had more than trebled. The annual revenue derived from the national roads of Saxony planted with fruit trees, rose from £1,800 in 1880 to £8,400 in 1892, furnishing a total sum of £68,'00 for the 13 years. In Belgium, according to the statistics of 1894, over 2,875 miles of rods were planted with 741,571 fruit trees, which furnished the large sum of £400,000. In France the production of fruit trees is estimated at £12,000,000. In Westphalia, in the Duchies of Baden and Saxe Weimar, in Alsace-Loraine, Switzerland, &c., the *employes* of the Administration of Roads and Bridges and the road supervisors, are instructed in fruit culture. In some of the southern departments of France the roads are bordered with cherry trees, producing the small fruit called *merise* (wild cherry), much appreciated for making wine *suigeneris*, preserves, and even alcohol. In the Tououraine, plum trees predominate, while in the Allier, the walnut trees transform the roads into shady walks. In Auvergne the chestnut tree flourishes; while in Normandy, place is naturally given to the apple tree. Some twenty years ago, the picturesque roads of tho north-east of France were lined with stately poplars; but although ornamental, their roots went far and wide, rendering the adjacent meadows sterile, and ploughs were continually stopped by offshoots lying almost at the surface of the soil. The farmers appealed in such strong terms, that the communes decided upon the fall of the poplar, and soon axes and saws were brought into requisition, and the roads cleared of these trees in favour of the humble but more useful *mirabelle* (small plum), to the great satisfaction of the villagers. Thousands of baskets of this fruit are sent to Paris daily. Some thirty years ago the distillation of the mirabelle was unknown in the country districts, the people plucked it as food for their pigs, but to-day they have learned to make more profitable use of it. They distil it in large quantities, and find a ready market for it. A quart of this alcohol, slightly perfumed, sold five or six years ago for only about 10d. or 15.. to-day it brings not less than 2s. or 2s. 6d.. while in Paris the best kind cannot be obtained under about 4s. 3d.—*Journal of the Society of Arts*,

RUBBER CULTIVATION IN GUATEMALA

According to the views of Senor Horta, who has recently issued a pamphlet on "Rubber in Guatemala," the climate most appropriate for the growth of the rubber tree is that of the Tierra Caliente, or hot coast lands, at an altitude not exceeding 1,500 ft., and the trees should not be planted in the sun, although the contrary opinion is held, and has been expressed by some authorities. Senor Horta gives as his reasons for this opinion: (1) The nature of the rubber tree; (2) experiments made in Guatemala; (3) the fact that by planting in the shade there is complete security and a satisfactory result. Experiments in Guatemala have shown that rubber plantations in the open do not develop nor give a profitable yield, and planters have suffered serious loss on this account, not only in this country, but also in Tabasco, Chiapas (in Mexico), and in British Honduras. By planting in the shade it will always be an easy matter, if special conditions of the soil so require to remove superfluous shelter. Under these circumstances it is not necessary to consider the manner of cultivation suggested by some persons, namely, that of planting rubber in the sun and using the trees as shade for coffee or cacao. This mode has been tried and, has given very unsatisfactory results, not only in Guatemala, but also in Tabasco and British Honduras; in some cases it was necessary to destroy the rubber tree and substitute others giving better shade, and in other cases the entire plantation had to be abandoned. It is a mistake to cultivate together such plants as coffee and rubber, which require distinct climatic conditions, soil, and atmosphere; the result invariably is that neither acquires a proper development. The yield of rubber trees has been estimated by some agriculturists as high as 3 lb. yearly from the sixth year; Senor Horta does not consider that trees should be tapped before their ninth year, and says that, according to his personal experience, 1 lb. of rubber, say 2½ lb. to 3 lb. of milk, is a good annual yield. According to him, the milk may be extracted twice each year, during the rainy season, about two months after its commencement, and again towards its close; the most propitious time being when the tree has dropped its leaves, and when the sap is most abundant and most active. He adds that, if agriculturists would devote themselves to giving great attention to the study of the nature and conditions of life of the rubber trees, to the progress of its sap, to the stimulants and fertilisers that might be advantageous to it, it is probable that this yield might be greatly increased.

SPRUCE GUM IN RAMIE, U.S.A.

The gathering of spruce gum as a side issue of lumbering during the less active months in Maine has grown to be quite a large industry. The crop for the past year was the largest on record and the last consignment of six tons was delivered late in August, bringing the total for the year to nearly thirty tons, valued at about $63,000. The process of collecting the material has many interesting features. During the winter, when the snow in the woods is not too deep, a "hunter" goes from camp to camp picking out good-looking trees that have a supply of gum clinging to the bark. He makes a note of each tree, making it by cutting into the bark with his axe. In the spring, when the snow has melted he leads a party of pickers over the same territory, and they clean the trees of the gum that has accumulated. The instrument used for picking purposes is of fine surgeon's steel, tempered to such a degree that it can be bent to almost any shape and not bark. This is necessary, for on many of the trees the gum is hanging to the bark in such a manner that to attempt to remove it with anything but a crooked blade would be useless.

The gum as it is scraped from the tree is taken in a large basket to the nearest lumber camp and left for the coming of the "chaser," whose duty it is to see that the gum is delivered to the "boss" who has sent the expedition out. When the gum arrives at the latter place it is spread on a carpet and the whole neighborhood takes a hand in sorting the good from the bad, the lightcolored from the dark. Then it is "blowed," a huge bellows not unlike those used in a blacksmith shop being used for the purpose. The gum is then ready to be bagged and sent to the city dealer, who in turn disposes of most of it to chewing gum manufacturers.—*New York Manufacturer.*

Ceylon Land and Produce Company (Limited).—On page 422 we give the report for the year ended June 30th, which states that the amount at credit of profit and loss account is £11,979, which, with £321 brought forward, leaves £12,300 to be distributed. In July an interim dividend of 7½ per cent on the ordinary shares and three per cent on the preference shares was paid, and the directors now propose to pay the balance of the fixed cumulative dividend on the preference shares, making six per cent for the year, and 7½ per cent on the ordinary shares, making 15 per cent for the year, and in addition, a bonus of five per cent on the ordinary shares—all tax free. It is also proposed to transfer £4,000 from profit and loss account to reserve fund, increasing it to £17,500, and carry forward £1,533, subject to the directors' remuneration for the year under review, and to the payment of income-tax, &c. The directors have decided to issue the balance of the six per cent cumulative preference capital—viz., 2,150 shares of £5, which are offered at a premium of 12s 6d per share to the preference shareholders. We congratulate all concerned upon the result of the years' working.

Ceylon Tea in Russia.—It will be good news to planters to learn that the Russian firms in Colombo have been conferring with English firms doing business with Russia in Ceylon tea, with a view to a meeting in the early future at which it is hoped some arrangement may be reached whereby the scope of such business may be generally enlarged. The meeting, we understand, will most likely be held at the Bristol Hotel on November 27th, though the date has not actually been fixed. The ground for such a meeting is, we understand, the impossibility of supplying the Russian market direct with sufficient Ceylon tea at the present time: further orders from Russia would be forthcoming were it possible for the local firms to guarantee larger regular shipments from Ceylon. The only way to enlarge the scope of the business, therefore, would be to have more teas put up for auction in Colombo. If Russian firms in Russia increase their orders, while the same quantities are put up here week after week, prices may rise by reason of the increased competition among buyers; and this would in turn check the Russian orders from home undesirable. Hence the anxiety to obtain larger local deliveries; and, following up our remarks of last evening, we must urge the local exporter to cultivate the local market with more vigour than hitherto. Prices need not go down, but a larger capture of the Russian taste will be in store for Ceylon teas, if the deliveries in Colombo are considerably increased.

CENTRAL TEA COMPANY OF CEYLON, LD.

[The following is a copy of the report.]

The Directors have the pleasure to submit the General Balance Sheet and Profit and Loss account for the year ending 30th June, 1899, duly audited.

	£ s d	£ s d
The net amount at credit of Profit and Loss account, including the balance brought forward at 30th June, 1898, and after providing for General Expenses, Directors' Fees, Income Tax, &c., is ...	—	2,935 7 7
Dividends on the 6 per cent. Preference Shares were paid for 1898 9 (less Income Tax) amounting to ..	1,505 0 0	
It is proposed to pay a Dividend of 6 per cent (less Income Tax) on the Ordinary Shares which will absorb ..	1,073 0 0	
And to carry forward to next year a balance of ...	557 7 7	
		£2,935 7 7

The Directors trust the results of the year's working of the Estates will be considered satisfactory by the Shareholders.

The gross average price realised for the tea was 7·87d per lb., as against 7·75d per lb. last season, and the rate of exchange was 1s 4 19·64d as against 1s 4d.

The yield of tea was 331,427 lb., being 377 lb. per acre over a plucking area of 879 acres.

The acreages of the Estates are as under—

Estate.	Tea. In bearing.	Partial bearing.	New clearings.	Cardamoms.	Forest Grass and Waste.	Total acreages.
Kabragalla ..	431	61	16	32	397	937
Somerset .. (Including Easdale and Loxa)	387	..	13	...	33	443
Total ..	818	61	29	32	430	1370

Under clause No. 24 of the Articles of Association Mr. J. Sancroft Holmes retires on this occasion from the Board, and being eligible, offers himself for re-election.

The Auditors, Messrs. Harper Brothers, Chartered Accountants, also retire from office, and offer themselves for re-election.—By order of the Board,

Wm. Johnston, Secretary.

MINOR PRODUCTS REPORT.

Citronella Oil.—Quiet and unchanged, with small sales at 11½d per pound in tins, and 11d in drums on the spot.

Spices.—A quantity of Cinnamon-chips, offered without reserve, sold at 7d to 8d per pound for pieces, quillings at 5½d per pound, featherings at 4d to 4¾d per pound, bark and common chips at 2d to 3d per pound.—*Chemist and Druggist*, Nov. 11.

UNITED COFFEE GROWERS' CO.

The statutory meeting of The United Coffee Growers' Company, Ld., was held in the Assembly Room, Coonoor, on Wednesday. A statement was placed by the Directors before the shareholders, in which they were informed that the land for the erection of the buildings has been acquired in Coimbatore, but the building will, it is hoped, be completed in from two to three months' time; that roasting, mixing, and grinding machinery, as well as a tin-making plant, has been ordered from the Continent, and is now on its way out. It is estimated that this machinery will be capable of dealing with 400 to 500 tons of coffee per annum, which amount by the addition of another roasting machine, can be increased to 800 to 1,000 tons per annum, the engine-power and the tin-making machinery being sufficient for this additional output. The services of a gentleman who has been through a regular course of instruction in London and on the Continent have been secured. The Company has spared no pains to put itself into a position to place the best article on the market at the lowest price. A statement of the financial position of the Company was made by the Directors and was found to be in every way satisfactory. This being a Statutory Meeting, no other business was transacted. The Annual General Meeting of the Company was fixed for July, 1900.—*Madras Mail*, Dec. 1.

PRODUCE AND PLANTING.

Adulterated Tea.—It is to be regretted that the Commissioners of Customs, in their reference to the examination made by their analyst on imported teas before they are taken out of bond, do not state where the teas of doubtful character upon which they report come from. It is not difficult for the export to guess, but the public, not so well acquainted with the tricks of certain growers and manipulators in the Far East and in Germany, possibly imagine that Indian and Ceylon teas are sometimes adulterated. The report of Mr. W Cobden Samuel, tea analyst, is as follows of the 938 samples analysed 70 samples of green tea faced, 20 samples of green tea unfaced, 46 samples of green tea capers, 595 samples of black tea, congou, 160 samples of black tea dust, 47 samples of black tea siftings. Of the total 854 were, on analysis, considered satisfactory, and the importations represented by them were accordingly delivered on the certificate of the analyst. The remaining 84 samples represented teas of doubtful character, the results of analysis of which were reported to the Board for their decision, with the result that the whole of these, representing 1,603 packages, were restricted to exportation or for manufacture of caffeine. In regard to samples of tea examined by public analysts, it was stated in the annual report for 1896-97 that of the 4,289 samples examined in the previous five years only four had been reported against. In 1897 one sample was condemned, but during the past year, out of 486 samples taken, as many as fifteen were adulterated, while eight more were returned as of inferior quality. Many, of these were of the variety known as caper tea, and were reported to contain excessive quantities of mineral matter. Respecting this revival of an old and somewhat ingenious method of adulteration, which consists of the addition of stones and sand to tea in order to increase its weight, the analyst for the country of Derby writes: "The practice is defended by interested persons on the ground that the mineral matter is unavoidably introduced during the process of the preparation of the tea for the market. This contention, however, cannot be sustained, as genuine tea practically never contains 1 per cent. of mineral matter in the form of sand, where sand and stones are present in the proportion found in the samples under observation, these foreign substances must have been purposely introduced, and possibly caper tea is chosen as the chief medium for the operations because the shape of the leaf after its preparation for sale is favourable for the concealment of the stones. The tea certified by me to contain 4 per cent. of sand and stones was sold at the high price of 3s 8d per lb. and the adulteration, which was actually in the excess of the amount certified by me, was obviously of a fairly remunerative character,

Legal proceedings were taken in five instances of tea adulteration, and two fines were inflicted.

Adulterated Coffee.—Of the 1879 samples of coffee examined 10 per cent were condemned. As usual, many samples were reported to contain large quantities of chicory.

Tea Reform and Dock Charges.—With reference to the comments on this subject which have appeared in the *Produce Markets Review*, and which we have reproduced, that journal remarks in its issue of last Saturday that these comments have led to a good deal of criticism, especially on the subject of the dock charges. "Our figures," it says, "were compiled from the dock books themselves by one whose sole occupation it is to look after such matters, but the items are most obscurely given by the companies, and it is indeed impossible for any one except an expert to make head or tail of them. Our object was, however, to secure absolute accuracy, and as we find on close scrutiny that some of the items (notably the bulking and taring, in which, after reference, we believed we were right) are inaccurate, we append a corrected statement of dock charges on Indian tea in this port, and a comparison of them with those on other goods. This comparison is the important point and not fractional differences in details. The errors affected by our critics, which we gladly correct, affect this comparison to the extent that we overstated the Indian tea charges comparatively 3s 6d per ton, they working out at 52s 6d instead of 56s. Warrants and weight notes were not included by us in tea, which would practically cover this small balance, but we are content to take the smaller figure. What possible reason can there be, except gross mismanagement and monopoly, for the charges on Indian tea being four times more than those on Indian coffee? To satisfy our critics we now give the following corrected charges on one ton of Indian tea landed and sold at public sale taking twenty chests to a ton: Landing and housing rate, at 1s 6d per chest £1 10s; public sale charges, at 4d per chest, 6s 8d; bulking and taring each, chest, at 1s 5d per chest, £1 8s 4d; and ten weeks' rent, at ½d per chest, 8s 4d; giving a total of £3 13s. 4d. From this a discount of 10 per cent. is deducted, leaving a balance of £3 6s, and then again to this has to be added the charges for weight notes and warrant stamps, which are 8d and 1s respectively, thus giving a net total of £3 7s 8."

Coming Down Handsome.—The Tea Trade Section of the Mincing Lane branch of the Lord Mayors Transvaal Widows and Orphans' Fund has made a hearty response to the call for subscriptions. Tea companies, growers, agency firms, importers, brokers, dealers, distributors, and warehouse-keepers are doing their best to swell the fund, which already reaches £8,000. The tide of subscriptions flows bountifully, thanks to the energy of those who are working in the good cause. We hope shortly to publish a list of the subscribers.—*Home and Colonial Mail*, Nov. 17.

THE CEYLON LAND AND PRODUCE COMPANY, LTD.

London, Nov. 17.

Being in the City, I looked in at the annual meeting of that very prosperous institution—

THE CEYLON LAND AND PRODUCE CO., LD.

—to find the Chairman (Mr. James Wilson) and his co-Directors and the Secretary (Mr. Loch,) and four or five shareholders taking the Report as read; while Mr. Wilson (having a heavy cold) handed his address to be read by his son. It was both practical and interesting.

As last from Ceylon I ventured to second the adoption of the Report, congratulating the shareholders on continued prosperity, due largely to judicious management, but also to the low rate at which their fine properties stood in the Company's books, showing the prescience of the original founders of the Company and of Mr. Wilson. I called attention to the great extension of cacao-planting now going on in Trinidad in supersession of sugar, as a reason for some caution, and thought care should also be taken in planting coconuts among tea. At the same time I corroborated the view that, with attention and liberal cultivation, there was no reason for alarm in regard to tea blight or cacao canker.

Mr. Seton (the well-known tea sharebroker, &c.) followed with some weighty remarks, as an expert on the financial position of the country, arguing that it was a pity with so many shares not fully paid, additional capital should be called up, and dealing also with blight from experience in Assam.—Capt. Brebner and another shareholder took the same view about the calling of new capital, and it was also suggested that the Company should get a quotation on the Stock Exchange.

But the Chairman and Mr. Seton both showed that this was really not worth the trouble it involved and indeed it might require the remodelling of the Company *de novo*; while the Chairman also showed that they could not call up the balance of capital due on shares without paying off debentures and the time had not come for that yet. He also mentioned that the coconut palms on Peradeniya were prosperous and seemed to do no harm to the tea; that the cacao now being planted was *Forastero* and he called on Mr. Lewis (of Messrs. Lewis and Noyes, cocoa brokers) to refer to cacao.

This Mr. Lewis did in a very reassuring way, saying he did not think West Indian cocoa would ever compete with the Ceylon article which had special qualities of its own. That great efforts had been made in Trinidad to prepare similar quality, but without success, and he had no fear for the future.

(Still, it is a fact that the price of Ceylon has fallen from the maximum a good deal, and that it is not now rated in value so much above the West Indian cocoa, although the price is still satisfactory.—Mr. Lewis also mentioned that Ceylon cocoa was used for special purposes by the manufacturers. Altogether the discussion was an interesting and instructive one, as regards tea, cocoa, coconuts and rules of finance).

Thanks were duly moved to the Chairman and Directors, and, on my suggestion, the resolution was extended to include the Visiting Agent and Estate Managers in Ceylon; and I testified to Mr. Anderson, of Peradeniya, being one of the most reliable and hard-working planters in the island. This was readily agreed to, and the Chairman promised to convey the unanimous thanks of the meeting to Mr. Anderson and the different superintendents.

One announcement made by the Secretary (Mr. Loch) gave general satisfaction, namely, that a register of shareholders was to be kept open for inspection at any time.

Correspondence.

To the Editor.

COLLLECTIVE ACTION FOR TEA GROWERS.

LONDON, Nov. 17.

DEAR SIR,—Those who have carefully investigated, admit that a combination exists among buyers, which is undoubtedly evidenced by their strong Buyers Association at Birmingham and what is soon started in London, extraneous evidence too has come from America, shewing conclusively that an arrangement has existed among the larger buyers in London, for some years.

LOSS BY FALL IN EXCHANGE.

What is unsatisfactory in the position of tea just now is the loss the interest has sustained by exchange. If this were recovered, profits would average 4 per cent. more than at present, but so long as the buyers are strengthened by their Associations; unless met by similar methods; it is difficult to see how a permanent recovery can be accomplished. Organization must always, in the long run, beat what is not organized; discipline what is indisciplined.

REGULATION OF SUPPLIES,

Supply and demand will undoubtedly in time fairly adjust prices, but in the lengthened process of the swing, first credit and then capital go. By a system of regulation, now almost universally adopted by the various industries of Great Britain, the great extremes of the crude supply and demand process, are eased and a more moderate result ensues. It has been found that by allowing the price of any product to fall to a low level, that it is next to impossible to re-establish it. This, of course, applies more to imperishable, rather than perishable commodities, and in this respect tea is favoured. When Pattison's Whisky Company failed, the trade arranged that the stock should not be thrown on the market, simply, in case it should establish a lower price. Thus within the process of supply and demand, the extremes produced are modified, a more average result ensues, investors know better where they are; and an industry is better established and accredited.

So far everything goes to shew that the organization is only on the side of the buyers, the seller, using no means of meeting them; in this the produce markets of Great Britain stand alone.

THE INDIAN TEA ASSOCIATION'S MEASURES.

Since most of the foregoing was written the Indian Tea Planters' Association in London has wisely regulated its sales, and if Ceylon would only do the same, say, from 1st May to 31st October, prices would be improved. Since "regulation" has come in, it is only necessary to compare now much better, relatively, Indian teas have sold than Ceylons. A very casual glance over sale lists will prove this. It should be the endeavour of Ceylon to begin regulating their sales from May next.

The beneficial result of regulation by the Indian growers is shewing itself in an earlier return to better prices and against a less favourable statistical position at the same time last year.

A TEA PRODUCERS' ASSOCIATION MUST BE FORMED.

The only way of meeting buyers on equal grounds now; is for a Tea Producers' Association of London to be formed and after due attention has been made, to regulation of sales of all teas, to bear the following in view.

To facilitate also the production of tea to its requirements, the Association should have a record department, wherein should be kept at the disposal of members, complete statistical and general information, with compiled tables made therefrom. These should be as complete as possible so as to have some influence in preventing unwise extensions.

EDUCATION OF THE PUBLIC.

There should also be some effort made at educating the public, for already, although the less discriminating are satisfied, those who can pay for their teas have little opportunity of obtaining the choicest blends and of which, most know nothing.

There is a large grocer in an important provincial town who buys wholesale 1s 1d, 1s 2d and 1s 3d, teas which he retails respectively at 1s 4d, 1s 8d and 2s per lb. Indeed a close investigation shews that such anomalies exist small sides.

OBNOXIOUS REDUCTION IN VARIETY OF TEAS.

The worst feature, from a producer's point of view, is the growing efforts to reduce teas to only two or three kinds; when there should really be as great a choice as there are of wines. Against this the strongest stand should be made. So far as has brought the staple down to an indiscriminate mass, without distinctive flavour, or character, a practical blending of port, sherry, and claret to a general average. To anyone with a palate for what is delicate and choice it has no attraction and the fear is that amongst our customers, who are prepared to pay for a choice article, that they will sooner or later revert to coffee and chocolate. Unfortunately this catering for the masses, in cheap teas in packets, has drawn in the thrifty, though well-to-do, housewife to purchase 1s 4d instead of 2s teas, and until some effort is made to shew the distinction, things are likely to become worse rather than better. From cottage to palace, one and all are buying cheap teas in a manner never known before, not from choice, but ignorance.

Medium teas have little value in the public market. Large quantities of low-priced are blended with a strain of anything likely to make them pass muster. Buyers recognise two kinds, high and lose, but are determined to throw the bulk, the medium teas out of competition, consequently, whether by a preconcerted arrangement or not, they fall to the buyer without any apparent public competition whatever.

THE PUBLIC BUYS AS IT IS TAUGHT.

There are people who will say, the public buy what they want. This is a mistake, those of the public who have an opportunity of judging are not satisfied. The bulk are led by advertisments and what appears in the interested public papers, and which the Association should refute—for instance it is advertised everywhere, "that the best tea the world produces" can be bought for 1s 7d; personally, the writer considers this 1s 7d tea dear at the money. and not what a gentleman or lady should have on their table. He also recognises among well-to-do people, that good China is gaining ground; which can only

be accounted for by a natural reaction from the strong pungent tea of the masses, being so indiscriminately used in the drawing rooms of many of the wealthy.

HOME ACTION MUST BE TAKEN.

With a Tea Producers' Association in London, that would fairly face all these questions, of regulation of sales, collecting accurate and complete statistics, instructing and educating the public and having machinery to touch the trade in every part, there is nothing to fear in the future of the tea industry. On the other hand, if producers believe that the falling of the distributing of their teas into fewer hands, as has happened more or less with almost every industry, means that they are to make no action themselves, they will have a rude awakening.

SUUM CUIQUE.

CARDAMOMS AND (ALOE) FIBRES.

Bambragalla, Rattota, Dec. 3.

DEAR SIR,—In your para "Tea and Cardamoms," in the *Observer* of the 1st instant, I see that a brother planter has corroborated what I stated in my letter to you of the 26th November. I know several small fields once planted with cardamoms, which are now growing good tea; but I do not know and never heard of any land which failed to grow tea well having been planted with cardamoms and I am quite sure that cardamoms would not bear in such land. The article by "L." in a Calcutta paper was about aloes not about rami. "L"'s experience of growing aloes has been very different from mine. My experience of growing aloes, the large kind with spines on the edges of the leaves, is distinctly adverse to growing them in poor useless land. Twenty years ago I thought they could be grown on any kind of land, so I planted up 15 acres of useless land with them (the large kind) and kept the field free of weeds for two years; but finding that the plants made little or no progress I abandoned it. Some of the plants continued to live for years afterwards, but never became large, though plants put in fairly good soil grew to the usual size.—Yours faithfully, R. B.

JADOO.

KANDY, NOV. 29.

DEAR SIR.—Can any of your readers tell me, from *bona fide* EXPERIENCE, if Jadoo is good for strawberries, as regards the bearing of fruit. E. F. T.

DEAR SIR,—In reference to "E. F. T"'s query *re*-Jadoo I may say from experience that this is a nutritious and convenient—because light and clean—form of soil, which is especially useful for plants grown in pots in rooms and verandahs. As regards its application to strawberries, however, it would no doubt be found to be productive of healthy growth for a time, provided it did not get too soon washed away by the rain; but, from a commercial point of view, it is very doubtful whether it would thus pay. Jadoo is a light spongy sort of soil, similar to decayed coconut fibre. At one time it was thought to be the medium *par excellence* for nursery-beds for tea, coffee, &c., but apparently it has not as yet stood this test.—Yours truly, X.

THE TEA DISPUTE AND RESULTS.

(*From a Home Correspondent*).

LONDON, Nov. 17.

H. M. Customs has at last given its decision with regard to the Dealers and Importers' petition regarding the terms of agreement come to in August last, and has issued its order. * * * It will be seen that this is distinctly an advantage in favour of the Importers.

It remains to be seen what steps the Buyers will now take to secure the "overtakers." I understand they have taken Counsel's opinion which is that they are legally entitled to them: but Importers have an opinion to the contrary effect. Perhaps, the best course would be to settle this by a friendly "test" case.

Notwithstanding the adverse criticism of the few that the draft was badly engineered, it appears to me that the result obtained has fully justified the efforts of the Joint Committee. The Importers have scored in the matter of Customs weighing, while Buyers have gained nothing.

The regulation of sales of Indian teas has been an unqualified success: the system adopted is working smoothly and has undoubtedly saved the market from being flooded with tea at this time of the year. Although Ceylon teas do not require regulation, the course adopted has been the means of keeping up the market for Ceylons as well as Indians.

The Associations are quietly working the warehouses, regarding a reduction of rates, and this is, I believe, in a fair way of being obtained. The docks, however, do not see their way to fall into line with the other warehouses which are prepared to make a reduction.

Should they persist, and the others do not break from the "ring," the inevitable result will be that a planters' warehouse will be started.

Another result of the "Tea Dispute" is that an Importers' Association is being formed. The draft of its constitution has, I learn, been drawn up by the Joint Committee of the Indian and Ceylon Associations; but will not be submitted to those interested until the Committee have thoroughly matured the scheme.

The amount of time given by the members of the Joint Committee to the *great dispute*, and all these other questions affecting the Tea Industry on this side, has been a severe tax on busy men. In my opinion, those growers and importers who did not support the Committee, and more especially those who seceded after signing the agreement, should be heartily ashamed of themselves. No doubt, however, they will gladly accept all the advantages that others have fought and gained for them. You will remember it was the same with the voluntary tax and export cess for pushing our teas. A miserable minority who could not see beyond their noses, protested, but all the same reap the advantages with others. It is always good to have an opposition, but, when the fight has once begun, we should stand shoulder to shoulder, as our country is now doing in this Transvaal war.

Ceylon Rainfall.

The P. W. D. Meteorological Observations for Oct. 1899.—We append this Monthly Return of rain from which it will be seen that the highest fall was at Padupola in the Central Province, 43·07 inches, and the lowest at Kekanadura in the Southern Province, 1·29 inches.

Western Province.

Negombo, Mr. Bucknall (6) ... 14·26
Kalutara Mr. Gregson (56) ... 20·18
Labugama, Mr. Bond (369) ... 25·23
Henaratgoda, Mr. Silva (33) ... 15·95

Central Province.

Katugastota, Mr. Morgan (1,500) .. 15·55
New Valley, (Dikoya) Mr. Ward (3,708) .. 23·41
Helboda, (Pussellawa) Not received (3,300) ... —
Yarrow Estate, Mr. Peto (3,400)... 22·68
Peradeniya Mr. Perera (1,540) ... 13·92
Duckwari, Mr. Edwin (3,300) ... 26·12
Caledonia, Mr Goork (4,273) ... 15·83
Pussellawa, Mr. Powell (3,000) .. 23·79
Hakgala, Mr Ma.i Millan (5,581) .. 11·43
S. Wararajah Estate, Mr. Tatham (3,700) ... 23·03
St. Andrew's (Maskeliya), Not received (4,200)... —
Padupola, Mr. Ward ... (1,636) .. 43·07
Mylapitiya, Mr. Fletcher (1,707) ... 4·50

Northern Province.

Mullaittivu, Mr. Sanmukam (12) . 11·88
Jaffna Mr. MacDonnell (8) 18·06
Mankulam, (N. Road) Mr. Walker (167) .. 12·14
Elephant Pass, Mr. Silva (7) .. 12·15
Vangalachettykulam, Mr. Oorloff (179) ... 10·25
Point Pedro, Mr. Pararachasinghe (24) .. 15·34
Jaffna College, Mr. Cooke (9) ... 15·16
Kayts, Mr. Kretser ... (8) .. 8·93
Kankesanturai, Mr. Adams (10) . 12·76
Pallai, Mr. Silva (24) .. 10·90
Murikandy, (North-Central Road) Mr. Silva — 3·85
Nedunkeni, Mr. Sanmukam (122) ... 19·47
Chavakachcheri, Mr. Silva (16) ... 13·22
Udupiddi, Mr. Hastings (35) ... 15·09
Marichchukaddi, (14) Mr. Thamotharampillay 11·70
Murungan, Mr. Nunn (52) 9·36
Vavuniya Mr. Walker (318) 1·30

Southern Province.

Ella Vella (262) Mr. Smith 11·49
Kekanadura, (150) do 1·29
Denagama, (286) do 6·13
Udukiriwila Mr. Lourensz (235) ... 4·62
Kirama, Mr. Ismail (260) 4·06
Hali-ela (200) Mr. Smith 9·05
Tissamaharama, Mr. Peris (75) ... 1·77
Matara (15) Mr. Smith 8·93
Dandeniya, (157) do 0·13
Urubokka, Mr. Smith (890) ... 13·27
Elagala, Not received (121) —
Tangalla, (94) Mr. Barttlett ... 4·62
Mamadola, Mr. Cade (56) ... 4·72

Eastern Province.

Irrakkamam, (42) Mr. Bower ... 9·98
Devilana, Mr. Vanderstraaten (136) 6·65
Sagamata, Mr. Bower (40) ... 7·90
Ambare, do (65) 11·17
Kanthalai, Mr. Carte (150) 2·86
Allai, Mr. Carte (95) 17·90
Rukam, Mr. Vanderstraaten (120) .. 4·99
Periyakulam, Mr. Carte (20) ... 5·44
Chadaiyantalawa, Mr. Edge (57) ... 5·67
Kalmunai, do (12) 6·78
Rotewewa, do (30) 11·23
Lahugala, do (70) 7·40
Naulla, do (30) 6·10
Andankulam, Mr. Carte (41) ... 5·02
Manalpuddy, Mr. Vanderstraaten (21) 3·00
Maha-Oya-Tank, Mr. Vanderstraaten (190) 6·88

N.-W. Province.

Magalawewa, Mr. Sooperayan (176) .. 7·40
Maha Uswewa tank, Mr. Crabb (160) ... 8·93
Tenepitiya, Mr. Churchill (8) ... 12·20
Batalagoda, Mr. Fonseka — 20·60

N.-C. Province.

Kalawewa, (268) Mr. Carson 9·09
Maradankadawala, Mr. Carson (443) ... 10·47
Mihintale, Mr MacBride (354) .. 10·63
Horowapotana, Mr. MacBride (217) ... 7·50
Madawachchiya, Mr. MacBride (285) ... 10·58
Topare, (200) Not received .. —
Minneriya — Mr. Eves 11·22

Uva Province.

Bandarawela, Mr. Christie (4,000) ... 0·74
Haldummulla, Mr. Viramuttu (3,160) ... 12·10
Kumbukan, (446) Mr. Emerson ... 8·45
Koslanda, (2,258) Mr. Emerson ... 26·44
Tanamalwila, Not received (550) ... —
Bibile, Mr. Silva (780) 16·56
Talkena, Mr. Fernando (1,100) ... 7·55
Alutnuwara — H. L. 3·63

Sabaragamuwa.

Ambanpitiya, Mr. Caldicott (729) 16·13
Pelmadulla, Mr. Clarke (408) 14·85
Kolonna Korale (Hulanda-oya) (203) Mr. Dabre 8·64
Avisawella, Mr. Jeffery (105) 16·08

Ceylon Rainfall.

S. G. O. Meteorological Observations for June, 1899.

The following is the return of the total fall of rain for June, from which it will be seen that the highest fall was at Coldstream Estate, Watawala, 39·88 inches, and the lowest at Mannar, 0·01 inches.

Colombo (40) 9·23
Ratnapura (84) 26·24
Puttalam (27) 0·40
Anuradhapura (295) 0
Mannar (12) *0·01*
Jaffna .. 0
Trincomalee (12) 0
Batticaloa (26) 0·02
Hambantota (50) 2·64
Galle (48) 8·75
Kandy (1,654) 9·94
Nuwara Eliya (6,188) 13·72
Hakgala, Nuwara Eliya (5,581) 7·56
Badulla (2,225) 0·48
Vavuniya (317) instruments removed
Kurunegala (381) 9·57
Maligakanda, Colombo Mr. Johnson (70) 12·00
Agricultural School Colombo, Mr. Rodrigo 12·73
Welhelmina Puttalam, Mr. Ratnayeke (31) —
Horakele Estate, Chilaw, Mr. Peven (50) 5·55
Chilaw Kachcheri Chilaw, Mr Koch (10) 2·65
Franklands Estate —
Veyangoda, Mr. Beven 10·17
Orange Hill, Ragama Mr. Bury (50) 14·87
Henaratgoda Gardens, Henaratgoda, Mr. de Silva (33) 14·38
Kotua Godella, Rambuk'a Mr. Windus (550) —
Eadella or Liberia Estate Polgahawela Mr. Craighead (425) 10·51
Geekianakanda, Neboda Mr. Towgood (200) 17·02
Polgahakanda, Neboda Mr. Wight (500) 17·13
Labugama, Hanwella. Mr. Bond (369) 21·74
Ruyigam, Horana, Mr. Dawson, (300) 17·69
Kanangama, Avissawella Mr. Cooke (200) —
Dunedin Estate, Avissawella, Mr. Bayley, (400) 19·57
Digalla Avisawella, Mr. Tottenham, (400) 23·01
Pambagama, Avisawella, Mr. Bridgman (600) —
Avisawella Estate Avisawella Mr. Byrde (250) 21·86
Yatideriya, Kegalla, Mr. Fairweather — 23·23
Mahawalatenna, Balangoda Mahawalatenna R. M. — 8·28
Agarsland Estate Balangoda Mr. Boyd (2,515) —
Maduwanwala, Rakwana, Maduwanwela R.M. (750) 2·50
Anninkanda, Morawaka, Mr. Anderson, (1,400) 21·33
Panilkanda, Morawaka, Mr. Davidson. (1,900) 18·93
St. John Del Rev, Bogawantalawa Mr. Glanville (4,300) 14·31
Friedland, Bogawantalawa Mr. Rammell (5,200) 15·83
Campion, Bogawantalawa, Mr. Gidden, (4,840) 12·01
Blair Athol, Dikoya, Mr. Lane (3,641) 31·93
Annfield, Dikoya. Mr. Knight (4,300) 20·54
Maskeliya Hospital, Maskeliya Mr. Bulner (4,200) 21·25
Hope Estate, Hewaheta, Mr. Bagot (5,000) 14·59
Coldstream Estate, Watawala, Mr. Speeding (3,800) *39·88*
Holmwood Est., Agrapatana, Mr. Gray (5,240) 16·53
Sandringham, Agrapatana Mr. Orchard (5,200) 12·42
Gingran-oya, Kotmale, Mr. Cox (3,800) 25·4
Labookelle, Ramboda, Mr. Stone (5,000) 37·00
Dunsinane, Pundalu-oya, Mr. Metcalfe 4,800 21·01
Sogama, Passe lawa, Mr. Eustace (3,500) 19·52
Kurundu-oya, Maturata, Mr. Corbetta (5,150) 1·67
Kabaragalla, Maturata, Mr. Maclean (4,200) 19·57
Maragalla Estate, Moopana, Mr. Betts (2,200) 0·30
Moopana, Hospital, Moopana (Mr. Sela) (500) 0·20
Madulsima Hospital Lunugala Dr. Vethecan (2,400) 0
Meeriabedda, Haputale, Mr. Dunnis (3,600) 0·40
Udahena Estate, Haputale, Mr. Bisset, (4,500) 0·31
Post Office, Bandarawela, Mr. Mendis (4,035) 0·38
Callander, Ohiya Mr. Green (5,125) —
Mariawatte, Gampola Mr. Salmond (1,600) 15·74
Orwell Estate, Gampola Mr. Taylor (1,800) 14·15
New Forest, Deltota, Mr. Wardrop (3,500) 16·26
Rajawella, Estate, Telleniya Mr. Miller, (1,500) 3·95
Lower Spring Valley, Badulla Mr. Rettie (3,650) 0·63
Gourakele Estate, Badulla Mr. Hope (1,200) 1·25
Morsaga'a Estate, Badulla, Mr. Deaker (4,500) 0·67
Ledgerwaite, Badulla Mr. Rettie (4,000) 0·50
Dea Ella Estate, N'walatenna Mr. Vanderslott (800) 13·65
Sembawatte Estate, N'pitiya Mr. Roe (1,600) 39·82
Gammaduwa, Estate, Rattota Mr. Westland (2,400) 4·17
Kobonella Estate, Rangala, Mr. Pole (3,300) 8·37
St. Martins, Rangala, Mr. Wyllie (3,600) 4·83
Crystal Hill Matale, Mr Van Srex (1,400) 5·31
Vicar on Estate, Matale Mr. Carrie (3,250) 15·51
Matale Mr. Tisseverasinghe (1,208) 6·29
Wariapolla, Matale, Mr. Dickenson (1,200) 6·83
Dambulla, Mr. Sinnetamby (400) 0·37
Kotta Estate, Pallai, Mr. Todd (13) ...
Mantota Hospital, Mannar, Mr. Adams (17) 0
Buttala Hospital, Buttala, Mr. Somasundram —
Police Station, Hatton Police Constable Miskin (4,141) 36·56
Medway Estate Nilaveli, Mr. Abraham, ... 0
Delwita, Kurunegala, Mr. Neame (490) —
Woodside, Uragalla Mr. MacMahon (3,000) 7·86
Gillardstown, Wattegama Mr. Hardy (2,500) 10·63

SHARE LIST.

ISSUED BY THE

COLOMBO SHARE BROKERS' ASSOCIATION.

CEYLON PRODUCE COMPANIES.

Company.	paid p. sh.	Buyers.	Sellers.	Transactions
Agra Ouvah Estates Co., Ltd.	500	900	—	900
Ceylon Tea and Coconut Estates	500	—	500 n'l	..
Castlereagh Tea Co., Ltd.	100	..	100	—
Ceylon Hills Estates Co., Ltd.	150	—	30	..
Ceylon Provincial Estates Co.	500	500	..	500
Claremont Estates Co., Ltd.	100	..	25	—
Clunes Tea Co., Ltd.	100	—	90	—
Clyde Estates Co., Ltd.	100	—	70	—
Doomoo Tea Co., Ltd.	100	60	65	—
Drayton Estate Co., Ltd.	100	150	—	.
Eila Tea Co., of Ceylon, Ltd.	100	62·50	65	65
Estates Co., of Uva, Ltd.	500	—	325	..
Gangawatta	500	—	..	—
Glasgow Estate Co., Ltd.	500	925	950	—
Great Western Tea Co.,	500	—	646·40	—
Hapugahalande Tea Estate Co.	200	—	..	..
High Forests Estates Co Ltd	500	—	570	—
Do part paid	350	—	—	387·50
Horekelly Estates Co., Ltd.	100	—	—	..
Kalutara Co., Ltd.	500	..	..	..
Kandyan Hills Co Ltd.	100	—	70	..
Kanapediwatte Ltd.	100	..	97·50	...
Kelani Tea Garden Co., Ltd.	100	—	65	—
Kirklees Estates Co., Ltd.	100	—	145	—
Knavesmire Estates Co., Ltd.	100	—	65	65
Maha Uva Estates Co., Ltd	500	—	500	
Mocha Tea Co., of Ceylon, Ltd.	500	640	—	..
Nahavilla Estate Co., Ltd.	500	450	475	475
Neboda Tea Co. Ltd	500	500	..	..
Nyassaland Coffee Co. Ltd.	100	..	..	..
Ottery Estate Co., Ltd.	100	..	—	—
Palmerston Tea Co., Ltd.	500	—	415	..
Penrhos Estates Co., Ltd.	100	97·50	100	..
Pine Hill Estate Co., Ltd.	60	—	50	..
Pitakanda Tea Company	500	1,000	—	..
Putupaula Tea Co., Ltd.	100	—	120	.
Ratwatte Cocoa Co., Ltd.	500	—	—	..
Rayigam Tea Co., Ltd.	100	65	70	65
Roeberry Tea Co., Ltd.	100	—	—	—
Ruanwella Tea Co., Ltd.	100	—	70	..
St. Heliers Tea Co., Ltd.	500	500	—	..
Talgaswela Tea Co., Ltd.	100	25	—	..
Do 7 per cent. Prefs.	100	...	..	..
Tonacombe Estate Co., Ltd.	500	—	450	—
Udabage Estate Co., Ltd.	100	..	—	—
Udugama Tea & Timber Co., Ltd.	50	..	—	..
Union Estate Co., Ltd.	500	—	300	—
Upper Maskeliya Estate Co., Ltd.	500	..	500	—
Uvakellie Tea Co., of Ceylon, Ltd.	100	...	70	...
Vogan Tea Co., Ltd.	100	..	90	87·50
Wanarajah Tea Co., Ltd.	500	—	1145	...
Yataderiya Tea Co., Ltd.	100	—	375	..

CEYLON COMMERCIAL COMPANIES

Company.	paid p. sh.	Buyers.	Sellers.	Transactions
Adam's Peak Hotel Co., Ltd.	100	40	..	—
Bristol Hotel Co., Ltd.	100	—	85	...
Do 7 per cent Debts	100	105	—	..
Ceylon Gen. Steam Navgt. Co., Ltd.	100	..	200	200
Colombo Apothecaries Co., Ltd	100	—	137·50	—
Colombo Assembly Rooms Co., Ltd.	20	12·50	..	..
Do prefs.	20	—	..	..
Colombo Fort Land and Building Co., Ltd.	100	..	..	95
Colombo Hotels Company	100	..	300	300
Galle Face Hotel Co., Ltd.	100	—	150	—
Kandy Hotels Co., Ltd.	100	112·50	—	—
Kandy Stations Hotels Co.	100	..	35	—
Mount Lavinia Hotels Co., Ltd.	500	—	350	..
New Colombo Ice Co., Ltd.	100	170	175	175
Nuwara Eliya Hotels Co., Ltd.	100	—	25	25
Public Hall Co., Ltd.	20	15	—	—
Petroleum Storage Co.	100	—	—	..
Do 10 % prefs.	100	—	...	..

LONDON COMPANIES.

Company.	paid p. sh.	Buyers.	Sellers.	Transactions
Alliance Tea Co., of Ceylon,	10	8—9	—	..
Anglo Ceylon General Estates Co.	100	—	45·50	..
Associated Estates Co., of Ceylon	10	—	..	4—5
Do. 6 per cent prefs.	10	—	7½	..
Ceylon Proprietary Co.	1	—	12·6—17·6	.
Ceylon Tea Plantation Co.,	10	—	25—26	..
Dimbula Valley Co.,	5	—	5½—5¾	..
Do prefs.	5	—	..	5½—6
Eastern Produce and Estates Co.,	5	—	6¼	..
Ederapolla Tea Co.,	10	—	7—8	..
Imperial Tea Estates	10	—	5-6	..
Kelani Valley Tea Assoc.,	5	—	5—6	..
Kintyre Estates Co.,	10	—	..	7—9
Lanka Plantation Co.,	10	4½	5—6	..
Nahalma Estates Co.,	1	—	½—¾	..
New Dimbula Co.,	1	—	2½—3	..
Nuwara Eliya Tea Estate Co.	10	9¼	—	9¼
Ouvah Coffee Co.,	10	7	—	..
Ragalla Tea Estates Co.,	10	—	10	..
Scottish Ceylon Tea Co.,	10	—	14—16	.
Spring Valley Tea Co.,	10	—	4—5	..
Standard Tea Co.,	10	—	..	11—12
The Shell Transport and Trading Company	100	—	200	..
Vatiyantota Ceylon Tea Co.,	10	—	8—9	..
Vatiyantota pref. 6 o/o	10	—	9¾—10¼	..

BY ORDER OF THE COMMITTEE.

Colombo, 8th December, 1899.

RAINFALL RETURN FOR COLOMBO.

(Supplied by the Surveyor-General.)

	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897	1898	Av of 29yrs.	1899
	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch	Inch	Inch	Inch.	Inch.
January ..	0·81	1·45	7·39	5·42	0·62	5·00	2·92	3·81	2·32	3·09	6·98
February ..	4·36	2·81	5·32	2·36	0·52	0·81	0·35	1·68	1·98	1·90	2·78
March ..	5·34	9·43	1·52	5·15	7·44	1·84	5·64	3·66	4·21	4·92	0·88
April ..	14·27	5.93	13·92	20·39	12·51	9·34	5·93	10·97	22·81	11·47	6·66
May ..	6·48	17·65	3·00	10·32	3·00	10·09	9·31	8·30	5·80	11·89	17·73
June ..	1·87	9.79	6·62	11·01	11·32	13·99	8·37	10·14	10·94	8·34	9·23
July ..	3·32	4·59	1·10	2·20	1·72	0·52	2·85	5·24	6·15	4·49	1·11
August ..	0·73	1·65	1·86	1·01	0·86	0·92	6·35	9·09	0·97	3·77	0·62
September	1·50	4·42	1·14	1·99	0·78	4·09	10·99	4·58	6·90	5·13	1·48
October ..	13·33	35·28	12·24	5·59	20·81	30·36	16·78	4·71	20·60	14·57	12·99
November..	12·32	18·37	5·86	18·10	14·63	5·83	19.81	11·68	17·38	12·80	8·78
December..	8·47	7·66	0·86	6·13	3·25	9·44	11·76	8·89	3·45	6·45	1·08*
Total..	72·80	119·03	60·83	89·67	77·46	92·23	101·06	82·73	103·11	88·82	70·12

* From 1st to 6th Dec. 1·08 inch, that is up to 9·30 a.m. 7th Dec.—ED. *C.O.*

THE TEA GARDENS ON THE CAUCASUS.—The report of the Russian Government on the results of the tea crops at the experimental tea plantations near Batoum shows that all three crops produced exceedingly good tea. The first sort could be sold at two shillings and three pence. The tea is prepared by the Ceylon method.—*Pioneer*, Nov. 27.

COLOMBO PRICE CURRENT.

(Furnished by the Chamber of Commerce.)

Colombo, 5th Dec. 1899.

Exchange on London :—Closing Rates: *Bank Selling Rates*:—On demand 1/4 3-32 to ⅛; 4 months' sight 1/4 to 23-32 to 3-16; 6 months' sight 1/4 7-32.

Bank Buying Rates:—Credits 3 months' sight 1/4 7-16 to 15-32; 6 months' sight 1/4 ⅝ to 21-32; Docts 3 months' sight 1/4 ½ to 17-32; 6 months' sight 1/4 11-16 to 23 32.

Indian Bank Minimum Rates 6 o/o

Local Rates: 1 % to 2 o/o Higher.

Coffee :—

Plantation Estate Parchment on the spot per bus—R10·00

Plantation Estate Coffee, f.o.b on the spot per cwt R70.00 Scarce. No fine offering.

Liberian Parchment on the spot per bus—None offering

Native Coffee f.o.b per cwt. None offering.

Tea:—Average Prices ruling during the week—Broken Pekoe per lb. 40c. Pekoe per lb. 35c. Pekoe Souchong per lb. 32c. Fannings, Broken Mixed and Dust per lb. 28c.—Averages of Week's sale.

Cinchona Bark:—Per unit of Sulphate of Quinine per lb 9c. 1 o/o to 4 o/o.

Cardamoms:—Per lb R2.00

Coconut Oil:—Mill oil per cwt. none

Dealers' oil per cwt. R13.75; Coconut oil in ordinary packages f.o.b. per ton R312.50

Copra:—Per candy of 560 lb. R42.00

Coconut Cake:—(Poonac) f o.b. per ton, R80.00

Cocoa unpicked & undried, per cwt. R45.00

Picked & Dried f. o. b. per cwt. R49.00

Coir Yarn.—Nos. 1 to 8 { Kogalla per cwt. R17.25 / Colombo ,, R16.00

Cinnamon :—Nos. 1 & 2 only f.o.b. 65c. Do Ordinary Assortment. per lb 58c.* { The attention of the trade is called to the fact that considerable quantities of wild Cinnamon have been shipped from Colombo for some time back, and that the same were included in the returns of Cinnamon shipped.

Ebony.—Per ton, No sales.

Plumbago:—Large Lumps per ton, R1,100

Ordinary Lumps per ton, R1,100

Chips per ton, R750, Dust per ton, R600; Dust Flying R200.

Rice.—Soolai per bag, { R7.60 to 8.35
,, per bushel, { R2.90 to 3.20

Pegu & Calcutta Calunda per bushel. R3.20 to 3.30

Coast Calunda per bushel, R3.15 to R3 25 Scarce

Mutusamba per bushel R3.75 to R4.00

Kadapa and Kuruwe, per bushel None.

Rangoon, raw 3 bushel bag. None.

Soola iKara per bushel R2.95 to 3.00

Coast Kara per bushel R3.00 to 3.10

THE LOCAL MARKET.

(By Mr. James Gibson, Baillie St., Fort.

Colombo, Dec. 5th, 1899.

Coffee :—

Estate Parchment :—per bushel	R9·00 to 10·00	Nominal.
Chetty do do	R6·00 to 8·00	
Native Coffee / do F. O. B } per cwt.	R35·00 to 37·00	
Liberian coffee:—per bushel	R3·00	
do cleaned coffee:—per cwt	R18·00	
Cocoa unpicked:—per cwt	R40·00	
do cleaned do	R43·00 to 45·0	
Cardamoms Malabar per lb	R1·10 to 1·10	
do Mysore do	R1·65 to 1·90	

Rice :—

Soolai per bag of 164 lb. nett	R8·00 to 8·25
Slate or 1st quality:—per bushel	R3·08 to 3·15
Soolai 2 & 3rd. do do do	R3·00 to 3·07
Coast Calunda	R3·15 to 3·25 s
Coast Kara	R3·00 to 3·10
Kazala	R2·95 to 2·98
Muttusamba Ordinary	R3·80 to 4·00
Cinnamon. per lb No 1 to 4	} scarce
do do 1 to 2	
do Chips per candy	R95 00
Coconuts Ordinary per thousand	R35·00 to 38 00
do Selected do	R36·00 to 39·00
Coconut Oil per cwt	R14·00 to 14·12½
do do F. O. B. per ton	R280·00 to 282·50

Poonac :—

Gingelly per ton	R90·00 to 92·50
Coconut Chekku do	R70·00 to 72·50
do Mill (retail) do	R75·00 to 77·50
Cotton Seed per ton	R77·50

Copra· per candy

Kalpitiya do	R41·50
Marawila do	R40·00
Cart Copra do	R38·00
Satinwood per cubic feet	R2 00 to 2·25
do Flowered do	R5·00 to 6·00
Halmilla do	R1·90
Palu do	R1·00 to 1·12
Ebony per ton	R75·00 to 175·00
Kitul fibre per cwt	28 00 to R30·00
Palmyra do do	R4·50 to 17·50
Jaffna Black Clean per cwt	none
do mixed do	R12·00 to 13·50
Indian do	R8·50 to 13·50
do Cleaned do	R12·00 to 17·50
Sapanwood per ton	R50·00 to 59·00
Kerosine oil American per case	R7·25 to 7·50
do bulk Russian per tin	R3·00 to 3·06
do Russian per case	R3·25 to 6 35
Nux Vomica per cwt	R2·00 to 3·50
Croton Seed per cwt	R30·00
Kapok cleaned f o b per cwt	R24·00
do uncleaned do	R6·00
Plumbago per ton, according to grade — Large lumps	R700·00 to 1,
do do	R550·00 to 950·
Chips	R300·00 to 650
Dust	R100·00 to 50

CEYLON EXPORTS AND DISTRIBUTION. 1899.

COUNTRIES	Tea, 1899 lbs.	Tea, 1898 lbs.	Coffee—cwt. Plantation	Coffee—cwt. N'tive	Coffee—cwt. Total.	Cinchona Branch & Trunk lb. 1899. lbs.	Cinchona Branch & Trunk lb. 1898. lbs.	Cocoa cwts.	C'moms lbs.	Wild Cinnamon Bales. lbs.	Wild Cinnamon Chips. lbs.	Coconut Oil. 1899 cwts.	Coconut Oil. 1898 cwts.
To U K. ..	92648109	86793704	13925	..	13925	459138	601765	34461	303209	109868	452430	160886	111912
,, Austria ..	8231	14293	1	..	1	..	..	...	...	...	..	6173	10579
,, Belgium ...	14424	12090	111	..	111	..	4421	357	380	...	..	2287	903
,, France ..	946[illegible]7	8[illegible]813	165	...	165	33	28228	34	...	...	..	..	4209
,, Germany ..	312[illegible]79	319929	125	..	125	1630	..	116	30176	5900	36133	8850	9003
,, Holland ..	30211	26351	..	..	..	..	..	..	...	...	..	...	..
,, Italy ..	1[illegible]471	6730	..	..	..	...	..	...	20	..	...	404	603
,, Russia ..	339526[illegible]	2140125	44	..	44	...	..	...	923	..	...	..	..
,, Spain ..	17800	44650	..	...	..	..	...	..	...	..	..	..	..
,, Sweden ..	63337	40821	..	..	..	..	..	...	4036	..	..	206	..
,, Turkey ..	18733	64834	1	..	1	..	...	..	636	..	...	..	..
,, India ..	5368[illegible]5	951233	149	..	149	..	..	1	50059	..	..	59600	122813
,, Australia ..	14560468	13959072	2933	..	2933	..	...	235	..	.	..	742	465
,, America ..	202[illegible]312	2047786	442	..	442	94005	186819	549	6240	..	..	90926	58786
,, Africa ..	265836	355882	9	..	9	...	724	..	2206	...	...	...	19
,, China ..	1201418	1034388	64	...	64	36549	22089	...	7751	..	..	3381	2633
,, Singapore ..	75[illegible]42	57330	80	..	80	..	..	..	880	..	..	23336	91893
,, Mauritius ..	905[illegible]8	17759	..	..	..	..	..	..	...	..	..	..	..
,, Malta ..	231967	176394	..	...		...	..	..	..	...	..	..	...
Total export from 1st Jan to 5th Dec 1899	116599700	108154184	18049	..	18049	591355	844046	35753	406496	115768	488563	356791	413809

MARKET RATES FOR OLD AND NEW PRODUCTS

(From Lewis & Peat's Fortnightly Prices Current, London, October 18th, 1899.

	QUALITY.	QUOTATIONS.
ALOES, Soccotrine cwt.	Fair to fine dry ...	44s a 100s
Zanzibar & Hepatic ,,	Common to good ...	20s a 60s
BEES' WAX, ,,		
Zanzibar & Bombay White ,,	Good to fine	£6 a £7 10s
Yellow ,,	Fair ,,	£5 10s a £6 10s
Madagascar ,,	Dark to good palish	£5 15s a £6 7s 6d
CAMPHOR, China ,,	Fair average quality	137s 6d
Japan ,,	,, ,, ,,	142s 6d
CARDAMOMS, Malabar lb	Clipped, bold, bright, fine	2s 6d a 2s 9d
	Middling, stalky & lean	1s 7d a 2s
Ceylon.—Mysore ,,	Fair to fine plump ..	3s 8d a 4s 3d
	Seeds .	1s 6d a 2s 6d
,, Tellicherry ,,	Good to fine ..	2s 11d a 3s
	Brownish .	2s 6d
,, Long ,,	Shelly to good ..	2s 6d a 3s 0d
,, Mangalore ,,	Med brown to good bold	2s 3d a 3s 3d
CASTOR OIL, Calcutta ,,	1sts and 2nds ..	3¼d a 4¼d
Madras ,,	..	3½d a 3¾d
CHILLIES, Zanzibar cwt.	Dull to fine bright ...	34s a 42s 6d
CINCHONA BARK.—		
Ceylon lb.	Crown, Renewed	5d a 7d
	Org. Stem	8⅞d
	Red Org. Stem	3¼d a 4⅛d
	Renewed	3⅜d
	Root	2¼d
CINNAMON, Ceylon 1sts per lb.	Ordinary to fine quill	1s a 1s 7d
2nds	,, ,,	9½d a 1s 7d
3rds	,, ,,	9d a 1s 5d
4ths	,, ,,	8½d a 1s 1d
Chips	,, ,,	2½d a 8d
CLOVES, Penang lb.	Dull to fine bright bold	4¼d a 9d
Amboyna ..	Dull to fine	4d a 5¼d
Zanzibar and Pemba	Good and fine bright	1¼d a 3⅝d
	Common dull to fair	3d a 3s 3-16d
Stems ..	Fair	1¾d
COCCULUS INDICUS cwt.	Fair	9s
COFFEE		
Ceylon Plantation ,,	Bold to fine bold colory	100s a 115s
	Middling to fine mid .	85s a 95s
	Low mid. and low grown	75s a 82s 6d
	Smalls	55s a 75s
Native	Good ordinary	30s a 70s
Liberian ,,	Small to bold	25s a 35s
COCOA, Ceylon ,,	Bold to fine bold	80s a 90s
	Medium and fair	65s a 77s 6d
	Triage to ordinary	42s 6d a 62s 6d
COLOMBO ROOT ,,	Fair to good	20s a 30s
COIR ROPE, Ceylon ton		nominal
Cochin ,,	Ordinary to fair	£14 a £23
FIBRE, Brush ,,	Ord. to fine long straight	£10 a £21
Cochin ,,	Ordinary to good clean	£18 a £22
Stuffing ,,	Common to fine	£7 a £9
COIR YARN, Ceylon ,,	Common to superior	£15 a £33
Cochin ,,	,, ,, very fine	£12 a £32
do. ,,	Roping, fair to good	£10 a £14 10s
CROTON SEEDS, sift. cwt.	Dull to fair	40s a 55s
CUTCH ,, ,,	Fair to fine dry	28s a 42s
GINGER, Bengal, rough ,,	Fair	22s
Calicut, Cut A ,,	Good to fine bold	75s a 82s
B & C ,,	Small and medium	27s 6d a 55s
Cochin Rough ,,	Common to fine bold	20s a 27s 6d
	Small and D's	17s 6d a 21s 6d
Japan ,,	Unsplit	21s 6d
GUM AMMONIACUM ,,	Sm. blocky to fine clean	20s a 45s
ANIMI, Zanzibar ,,	Picked fine pale in sorts	£10 7s 6d a £20
	Part yellow and mixed	£8 2/6 a £10 10s
	Bean and Pea size ditto	70s a £9 2/6
	Amber and dk. red bold	£5 10s a £7 10s
	Med. & bold glassy sorts	80s a 100s
Madagascar ,,	Fair to good palish ..	£4 8s a £8
	,, ,, red .	£4 5s a £9
ARABIC E. I. & Aden ,,	Ordinary to good pale	40s a 55s
Turkey sorts ,,		67s 6d a 85s
Ghatti ,,	Pickings to fine pale ...	12s 6d a 35s
Kurrachee ,,	Good and fine pale ...	52s 6d a 55s
	Reddish to pale selected	30s a 40s
Madras	Dark to fine pale ...	23s a 35s
ASSAFŒTIDA ,,	Clean fr to gd. almonds	40s a 80s
	Ord. stony and blocky	12s 6d a 35s
KINO ,,	Fine bright	2s a 3s
MYRRH, picked ,,	Fair to fine pale	65s a 75s
Aden sorts ,,	Middling to good	33s a 55s
OLIBANUM, drop ,,	Good to fine white	35s 6d a 50s
	Middling to fair	25s a 35s
pickings ,,	Low to good pale	17s a 20s
siftings ,,	Slightly foul to fine	10s 6d a 18s
INDIARUBBER, Assam lb	Good to fine	2s 10½d a 3s 4d
	Common to foul & mxd.	1s 4d a 2s 6d
Rangoon	Fair to good clean ...	2s 9d a 3s 2d
	Common to fine	1s a 2s 4d

	QUALITY.	QUOTATIONS.
INDIARUBBER, (*Contd*).		
Java, Sing. & Penang lb.	Foul to good clean ..	8d a 3s 3½d
Mozambique ,,	Good to fine Ball ...	2s 8d a 3s 7d
	Ordinary to fair Ball..	2s a 2s 10d
	Low sandy Ball ..	1s 3d a 1s 7d
	Sausage, fair to good ..	3s 2d a 3s 6d
	Liver and livery Ball	2s 4d a 3s 2d
Madagascar ,,	Fr. to fine pinky & white	3s a 3s 4½d
	Fair to good black .	2s a 2s 3d
	Niggers, low to fine ..	1s a 2s 6d
INDIGO, E.I. ,,	Bengal—	
	Shipping mid to gd violet	3s 9d a 4s 6d
	Consuming mid. to gd.	3s 6d a 3s 8d
	Ordinary to mid.	3s 2d a 3s 5d
	Mid. to good Kurpah	2s 2d a 2s 8d
	Low to ordinary	1s 11d a 2s 1d
	Mid. to good Madras	1s 5d a 2s 6d
MACE, Bombay & Penang per lb.	Pale reddish to fine	2s a 3s
	Ordinary to fair	1s 6d a 1s 11d
	Pickings	1s 3d a 1s 4½d
MYRABOLANES, Madras cwt	Dark to fine pale UG	5s a 6s
	Fair Coast	5s 6d a 6s
Bombay ,,	Jubblepore	4s 3d a 7s
	Bhimlies	4s 9d a 9s 6d
	Rhajpore, &c.	4s 3d a 8s
Bengal ,,	Calcutta	4s 6d a 6s
NUTMEGS— lb.	64's to 57's	2s 4d a 2s 6d
Bombay & Penang ,,	110's to 65's	1s 1d a 2s 4d
	160's to 130's	6d a 11d
NUTS, ARECA cwt.	Ordinary to fair fresh	12s a 21s
NUX VOMICA, Bombay per cwt.	Ordinary to middling	1s a 5s 6d
Madras	Fair to good bold fresh	7s a 10s
	Small ordinary and fair	5s 6d
OIL OF ANISEED lb	Fair merchantable	6s
CASSIA ,,	According to analysis	3s 11d a 5s 6d
LEMONGRASS ,,	Good flavour & colour	3d
NUTMEG ,,	Dingy to white	3d a 3½d
CINNAMON ,,	Ordinary to fair sweet	3½d a 1s 6d
CITRONELLE ,,	Bright & good flavour	11d a 1s 1/0½d
ORCHELLA WEED—cwt		
Ceylon ,,	Mid. to fine not woody .	10s a 12s 6d
Zanzibar. ,,	Picked clean flat leaf	10s a 16s
	,, wiry Mozambique	10s a 11s
PEPPER - (Black) lb.		
Alleppee & Tellicherry	Fair to bold heavy ..	5½d a 5⅝d
Singapore	Fair	5 9-16d a 5⅝d
Acheen & W. C. Penang	Dull to fine ...	4¾d a 5¼d
PLUMBAGO, lump cwt.	Fair to fine bright bold	64s a 72s
	Middling to good small	25s a 50s
chips ,,	Dull to fine bright ..	23s a 57s 6d
dust ,,	Ordinary to fine bright	12s a 35s
SAFFLOWER ,,	Good to fine pinky .	60s a 65s
	Inferior and pickings	40s a 57s 6d
SANDAL WOOD—		
Bombay, Logs ton.	Fair to fine flavour ..	£20 a £50
Chips ,,	... ...	5s a £8
Madras, Logs ,,	Fair to good flavour ..	£20 a £50
Chips ,,	Inferior to fine ...	£4 a £8
SAPANWOOD Bombay ,,	Lean to good ..	£4 a £5
Madras ,,	Good average ..	£4 a £5 nom
Manila ,,	Rough & rooty to good	£4 10s a £5 15s
Siam ,,	bold smooth	£6 a £7
SEEDLAC cwt.	Ord. dusty to gd. soluble	55s a 60s
SENNA, Tinnevelly lb	Good to fine bold green	5d a 8d
	Fair middling medium	4d a 5d
	Common dark and small	3¼d a 3¾d
SHELLS, M. o'PEARL—		
Bombay cwt.	Bold and A's D's and B's Small ...	£3 12s6d a £5 10
Mergui ,,	Small to bold ..	£6 a £8 10s
Mussel ,,	Small to bold ..	£1 a £2 17/6
TAMARINDS, Calcutta .. per cwt.	Mid. to fine bl'k not stony	15s a 16s
Madras	Stony and inferior ..	7s 6d a 9s
TORTOISESHELL—		
Zanzibar & Bombay lb.	Small to bold dark mottle part heavy	16s a 21s
TURMERIC, Bengal cwt.	Fair ...	26s
Madras ,,	Finger fair to fine bold bright	30s a 36s
Do. ,,	Bulbs ..	17s
Cochin ,,	Finger .	21s
	Bulbs ...	9s a 11s
VANILLOES— lb.		
Mauritius and Bourbon 1sts	Gd. crysallized 3½ a 9 in	20s a 29s 6d
2nds	Foxy & reddish 4½ a 8 ,,	21s a 25s
Seychelles . 3rds	Lean and inferior ...	10s a 14s
VERMILION lb.	Fine, pure, bright ...	2s 7d a 2s 8d
WAX, Japan, squares cwt	Good white hard ...	30s a 31s

THE
AGRICULTURAL MAGAZINE,
COLOMBO
Added as a Supplement Monthly to the "TROPICAL AGRICULTURIST."

The following pages include the Contents of the *Agricultural Magazine* for December :—

Vol. XI.] DECEMBER, 1899. [No. 6.

VETERINARY NOTES.

Actual Cautery or Firing.

THIS form of treatment well-known in Ceylon by the name of "Firing" or by the commoner expression "Burning," has by unjudicious use created a prejudice in the minds of many.

The lameness caused by sprains and exostosis is common enough in animals, and especially the horse, which though destined by nature to do fast work, is often worked without moderation, and this form of lameness requires the use of irritants in the shape of liniments, blisters or even the actual cautery to stimulate and check the growth of calcarious substances in case of exostosis, and also to stimulate and produce absorption and mechanical support in cases of sprain.

In serious cases of lameness by exostosis, blistering is often attended with only a partial success, and the use of the actual cautery will in many instances indicate in a short time the advisability or inadvisability of continuing further treatment. The advantages of the actual cautery over other forms of treatment are that it is acute and effectual, and that the cicatrix left serves as a mechanical support for the part that has undergone the operation.

No doubt it leaves a blemish. In cases of acute lameness caused by exostosis, point-firing is much preferable, because it does not cause much blemish ; but in cases of sprains, blistering and firing should be resorted to only when other forms of treatment fail.

Successful Operation of Neurotomy in a case of Navicular Disease.

A case of lameness was reported to me by a well-known horse owner, and from the history of the case I had very little difficulty in telling him that the animal was suffering from navicular lameness. I also informed him that I believed neuratomy to be the only treatment that could be adopted with success. I explained to him the evil results that usually follow neuratomy, but assured him that in the hands of good horsemen and under proper shoeing and care they could easily be prevented. I further explained that the operation is a very painful one, but considering the chronic pain the animal suffers daily, the tension pain caused by the operation can never be considered cruel. Accordingly, it was agreed to operate on the animal.

The animal underwent the operation on the 25th September, and owing to want of a well-trained assistant, it was operated upon without general anæsthesia. I found it rather difficult in carrying on my work with the use of a magnifying glass, but it is important to be able to pick out the nerve from the other vessels that run along with it, and which are very often severed by mistake.

It is also usual to tie up the nerve before it is severed, and in this conneciton I should like to emphasise that only loose knots should be used and not a surgical knot. If the operator learns that he has made a mistake by securing an artery or vein, it will be a herculean task to untie a surgical ligature when it is jammed up.

I have found sutures hardly of any help when it is aimed at bringing only the severed skin in juxtaposition ; for in the absence of highly organized muscular tissues, sutures generally fail, and so the wound was left unsutured, and I am glad to say in this case union was prompt and good.

The animal is now quite free from lameness.

D. A. CHINNIAH, *Vet. Surgeon.*

RAINFALL TAKEN AT THE SCHOOL OF AGRICULTURE DURING THE MONTH OF OCTOBER, 1899.

1	Sunday ..	Nil	17	Tuesday ..	1·03
2	Monday ..	Nil	18	Wednesday	·05
3	Tuesday ..	Nil	19	Thursday ..	Nil
4	Wednesday...	Nil	20	Friday ..	3·77
5	Thursday ...	Nil	21	Saturday ...	·33
6	Friday ...	Nil	22	Sunday ...	1·02
7	Saturday ...	Nil	23	Monday ...	·66
8	Sunday ..	·85	24	Tuesday ..	·09
9	Monday ...	Nil	25	Wednesday	·28
10	Tuesday ..	1·28	26	Thursday ..	·06
11	Wednesday	·41	27	Friday ..	Nil
12	Thursday ..	2·56	28	Saturday ..	Nil
13	Friday ..	·51	29	Sunday ..	·16
14	Saturday ..	·19	30	Monday ..	Nil
15	Sunday ..	2·65	31	Tuesday ..	Nil
16	Monday ..	·5			
				Total...	16·40

Greatest amount of rainfall in any 24 hours on the 20th inst. was 3·77 inches.

Mean rainfall for the month ·52 in.

Recorded by Mr. J. A. G. RODRIGO.

OCCASIONAL NOTES.

Before the present number of the *Agricultural Magazine* is out, the office of Director of Public Instruction for Ceylon will have changed hands, Mr. Harward, the present holder of the office giving over charge to Mr. S. M. Burrows, C.C.S. We cannot let this opportunity pass without recording our high appreciation of Mr. Harward's regimé as the head of the Department of Public Instruction and of the liberal spirit which he shewed in all his relations with the School of Agriculture and its kindred institutions.

The new Director comes with a reputation not only as an administrative officer, but also as an enthusiastic educationalist. What is, however, of more importance to us, Mr. Burrows has been known to evince the greatest interest in agricultural improvement, whether as regards land cultivation or stock-breeding; and for this reason we accord him a specially hearty welcome in his dual capacity of Director of Public Instruction and Agriculture.

It is currently reported that the Agricultural Commission appointed by H.E. the Governor have decided to recommend that a department of Agriculture and Irrigation be established for Ceylon, and that scientific experts in the persons of the Director Royal Botanic Gardens, the Entomologist and Veterinary Surgeon (officers already holding appointments) as well as an Agricultural Chemist and Cryptogamist (to be appointed) are to be "attached" to the Agricultural Department.

We take over from *Farm and Dairy* an interesting case of milk-prosecution, the details of which should be of special interest to dairymen. It is said that the defendant will appeal, and we shall be interested to know the final issue of the case.

ORIGIN OF THE NITROGEN OF NON-LEGUMINOUS PLANTS.

It has been shown by numerous analyses that soils abandoned for centuries to natural vegetation in which grasses predominate are quite rich in nitrogen. There are mountain meadows in France which during the open season are grazed by milch cows, and although this involves the removal of a considerable amount of nitrogen, and no fertilisers are used, these soils constantly increase in nitrogen content. While soils which are continously cultivated frequently contain not more than $1\frac{1}{2}$ to 2 parts per thousand of combined nitrogen, permanent meadows contain 5, 7, 9, and even 10 parts per thousand. The prairies of Western America are also well stocked with nitrogen. It is interesting to trace the origin of this nitrogen. Although the investigations of Ville and Atwater and those at Rothamsted and Grignon had proved that free nitrogen intervenes in the phenomena of vegetation, the process of fixation of nitrogen in the soil was not understood until explained by Berthelot, who showed that nitrogen is fixed in the soil by bacteria. Winogradsky cultivated certain of these bacteria in sugar solution, and found that they decomposed the solution, forming butyric and acetic acids and evolving carbon dioxide and hydrogen. They are therefore very similar to, if not identical with the organisms studied by Maquenne and Dehérain in 1882, and which decomposed sugar as explained above. The latter investigators, however, had no idea at that time that the ferments were able to fix the nitrogen of the air, and the investigation is mentioned simply to call attention to the fact that these ferments are very widely diffused, since they were found in all the soils studied. These organisms are all anaerobic, and it would seem surprising that they should grow in a medium so thoroughly aerated as arable soil; but this has been explained by Winogradsky as follows:—The organisms which fix nitrogen are capable of action only when associated with certain common species of organisms which are capable of oxidising orgainc matter, and which thus surround the anaerobic forms with an atmospbere changed with carbon dioxide and deprived of oxygen. Winogradsky further suggests that the hydrogen set free in the decomposition of the carbo-hydrates furnishes ammonia which is assimilated by the micro-organisms and used in the formation of tissue. It is not, therefore, simply the nitrogen which has recently been drawn from the air which is utilised by plants. They assimilate also the nitrogen derived from vegetable and animal remains. The work of Pasteur has shown that the action of micro-organisms is necessary to the transformation of the complex organic substances of the tissues of living plants into the simple forms which may be assimilated by plants. Without these organisms life would be impossible, as Pasteur himself has said, because the work of death would be incomplete. By their intervention the complex substances are burned, the carbon passing into the form of carbon dioxide, the hydrogen into water and the nitrogen into ammonia; and in these different forms the matter is again carried into

circulation. It often happens that vegetable matter remains for a long time in the form of humus; but even in this form it is utilised by plants. The humus is constantly subjected to the oxidising action of the lower organisms, and undergoes gradual decomposition. The ammonia produced by the decomposition of the humus is assimilated by plants as well as the readily available product of oxidation, nitric acid. Schloesing and Müntz 20 years ago showed that nitrates are formed in the soil by the action of organisms. More recently Winogradsky has demonstrated that the action of two different organisms is necessary for the transformation of ammonia into nitrates; one converts ammonia into nitrites and the other completes the oxidation, producing nitrates. We thus see that micro-organisms seize upon the nitrogen of the air and convert it into organic compounds; they convert vegetable matter into humus, and then breaks down this humus, producing ammonia and finally nitrates. At every step they perform a useful work, and are valuable auxiliaries of agriculture. There are, however, other organisms which interfere with the work of beneficial kinds. Bréal observed several years ago that there is an aerobic organism which decomposes nitrates and sets elementary nitrogen free. This organism is abundant in vegetable débris, especially in straw. It is also encountered in the excrement of domestic animals. The extent to which the losses of nitrogen in arable soils is due to the action of this dentrifying organism and the conditions most favourable to its action are questions which require further investigation.

NOTES ON EXHIBITS FOR PARIS.

EDIBLE BIRDS' NESTS.

(Continued.)

Portman is quoted by Dr. Watt as having published an interesting account of collecting the nests as pursued in the Andaman Islands:—

"Before the arrival of the swallows, and as soon as the weather is sufficiently settled, say, about the first week in November, all the caves in the islands should be visited and thoroughly cleaned, the portions of old nests and débris being removed. After the arrival of the birds, and as soon as it is ascertained that they have built their nests, all the caves should be visited and the nests collected and brought in. The date of this visit, and, indeed, the number of collections, during the seasons are fixed by the time at which the north-east monsoon rain ceases. Being unusually late this year (1885-86), we did not commence nest-collecting till the end of February, but with a dry December the collection might commence on the 15th January. As the collection of nests from the present known caves takes about a month, and the swallows rebuild their nest in six weeks or so, the collectors should wait about ten days in Port Blair, and then go out again, taking care to observe exactly the same order in their rounds. The nests may be collected until the commencement of the rains, when the collection should cease, and the birds be left to breed. Although the great demand is for the white nests, still it may be remarked that the fucus attachments of the grass nests, and the old nests gathered in November cleaning, may be sold locally at R5 per seer, and should, therefore, be collected. Each collection averages about 52 lb. of nests." He then proceeds to state the number of men employed by Government to collect the nests, adding: "The six collectors are supplied with torches, rough ladders, axes, and dahs, also with a large clean bag lined with linen slung to the side, and an iron implement, about a foot long, with three prongs at one head, and the other end being shaped like a cold chisel. These men detach, with this implement, nests from the sides and roofs of the caves, placing them carefully in their bag, from which, at the end of the work, they are transferred to a box provided with a lock."

In cooking the nests, they are first soaked in cold water for two hours, when they swell up and become soft. They are then easily picked to pieces and cleaned. After this they are boiled in clear chicken-broth until dissolved, a process occupying about two hours longer. The usual allowance is one nest (value R1) to a tea-cup of soup. Any clear soup may be used. The nest is absolutely tasteless and flavourless, but Mr. Portman does not consider them to be particularly strengthening or useful in any way.

Particulars are not available regarding the full extent of the Indian trade in nests. The merchants are Chinamen who reside in Rangoon. They recognise three classes:—

- No. 1. Large, pure white nests averaging from R110 to R115 per viss = $3\frac{1}{2}$ lbs.
- No. 2. Clean but slightly coloured nests, averaging from R100 to R140 a viss.
- No. 3. More discoloured and dirty nests.

The refuse sells at from R5 to R15 a seer. Balfour states that $8\frac{1}{2}$ million nests are annually imported into Canton, and that nests of the first quality fetch from £5 to £6 the lb.; those of the second, 9s. $4\frac{1}{2}$d.; those of the third, 3s. 1d. McCulloch says that the second quality fetches £4 14s., and the third £2 15s. The bulk of the more expensive nests are sent to Pekin for the use of the Court. The Japanese do not use the nests, but they prepare from a sea-weed an artificial nest called Dschin-Schan, which they export to China. Of the Ratnagiri District it is stated the right to collect nests is farmed out to Goanese. The Andaman contractor used to pay R3,000, but last year, owing to the contractor having thrown up his contract, the Government worked the nesting and realized £4,900.

In Ceylon *Collocalia nidifera* is widely distributed with the exception of the North and North-Western Provinces. It does not confine itself to any one altitude, even its building station extending from the seaside to the highest hills. These swifts select for their breeding places large dark and gloomy caverns, in the darkest parts of which they build their famous nests. These may number only a few or thousands, and are not always made of the same substances. The Ceylon nests are considered to be very poor in nutritive properties in comparison with those of Java, Borneo and China, having much less glutinous matter in their composition. The nests are closely built together against the face of some overhanging rock, and if one may judge by the

accumulation of guano below them, the same nest is used frequently. The nests are often found among the refuse on the floor of the caverns where these birds build. According to Dr. Trimen the isinglass-like matter which so largely enters into the composition of these nests, is most probably secreted by the glands situated on either side of the gullet, and which if pressed in a bird just shot emit a viscid matter.

The bird itself is an insignificant-looking little creature, of a somewhat smoky colour, darker on the head, wings and tail than on the other parts of the body. The Japan and Borneo representatives of the species are blue, but the two are said to be identical. The article is prepared for export to China by the natives of that country, who pay Government a small annual sum for the exclusive privilege of collecting the nests in certain caves, chiefly in the Morawak Korale of the Southern Province. The yearly value of this article of export does not exceed R4,000.

As regards the Guano, Dr. Watt says:—"There is no reason why India might not meet its own demands for Guano, if not open up an export trade in the article." Mr. de Roepstorff, referring to the Nicobar Islands, said, "I am certain that I can produce bird nests and guano to the value of at least one lakh of rupees per annum"; to which might be added the possible supply from the Andamans. There is no reason why all the guano procurable in Ceylon should not be conserved and utilized for manuring purposes.

RINDERPEST AND ITS REMEDY.

Captain Leonard Rogers, I.M.S., who has been holding the post of Imperial Bacteriologist in India during the absence of Dr. Lingard on sick leave, has published a most interesting paper on his researches in connection with the treatment and prevention of rinderpest. He does not claim to have fathomed the subject to its bottom, as may be seen by his opening remarks, but no one interested in cattle in this country can read his paper without feeling that very important and practical advances have been made. He commences thus:—"During the last three years a large amount of research work, with a view to discovering methods of protective inoculation against rinderpest, has been carried out in South Africa, with the result that several methods, differing more or less completely from each other, have been discovered and put into practice in that country. Differences of opinion as to the value of these divers methods were inevitable, and as, moreover, the conditions with regard to the prevalence and severity of the disease in India are very different from those of South Africa, it has been deemed necessary to test these methods carefully at the Muktesar laboratory and to apply the results obtained in actual outbreaks reporting with regard to what steps should be adopted to check the enormous loss of cattle from this disease which annually occurs in India. At the same time some new lines of inquiry have been opened out, although any great advance on the discoveries recently made in South Africa as a result of several years' work by numerous observers can hardly be expected. As it was not until January, 1899, or four months ago, that these experiments were commenced, no definite conclusions have as yet been arrived at, so only a brief outline of the work that has so far been carried out can be given in this report, reserving for a future occasion a full examination of the question. He then goes on in a most lucid manner to deal with the various methods of inoculation for rinderpest that have been in vogue in South Africa. It is of interest to note that the original method by Professor Koch, of inoculating the animals it was desired to protect with the fresh bile of an animal suffering from rinderpest, was borrowed from the natives of South Africa. There were many objections to this method, and, therefore, other means had to be resorted to. One of these was the injection of a large quantity of defibrinated blood of an animal which had suffered from rinderpest. The inoculated animal was then exposed to natural infection, contracted a mild form of the disease and was thereby rendered permanently immune. This plan was a great advance and formed the basis of the serum treatment to be presently mentioned. The principal objections to it were the large doses of the blood required, and the risk of transmitting malaria with the remedy.

The method which has been adopted in South Africa with the most encouraging results was one discovered by Messrs. Turner and Kolle. It consists in injecting a small dose of a powerfully protective serum into one side of the animal, at the same time, that a dose of virulent rinderpest blood is injected into the opposite side. The protective serum is obtained by repeated injections of gradually increased doses of virulent blood into an animal which has had rinderpest. The serum of the animal so prepared is thus made powerfully protective. The inoculated animal then goes through a mild attack in 90 per cent of the cases tried, and is, thereafter, permanently immune. Only half per cent of the animals so treated die. The latest report states that in Rhodesia over 100,000 animals had been inoculated with a loss of less than one per cent, the disease being thus stamped out of the country. Dr. Rogers goes on to say: "It might be thought at first sight from the above description that it only remains to put into practice in India the methods which have been so successfully used in South Africa, but a moment's consideration of the great differences between the intensity and distribution of the disease in the two countries will suffice to show that the problem is not quite so simple. . . In India the disease has been present for centuries, and consequently a certain degree of immunity has been gradually acquired, so that the disease is usually rather of an endemic than of an epidemic type, and is attended with a lower mortality, and has much less tendency to spread widely and rapidly than was the case in South Africa, although at times it assumes a more epidemic character."

What is most wanted is a method which will produce an immunity as rapidly as possible, as the outbreaks will seldom be reached until they are at their height, while, if it is to gain the confidence of the villagers, care must be taken not to run any risk of any material mortality among the inoculated cattle, or of a too

severe degree of illness, even at the expense of a less durable immunity, which is of much less importance in this country than it was in South Africa, for the reasons already pointed out. The religious susceptibilities of the people must also be reckoned with, and for this reason alone the bile method of Koch, which necessitates the slaughter of some 7 per cent of the animals, at from the sixth to the eighth days, in order to obtain bile for the protection of the others—a protection, moreover, which is only a temporary one—is practically out of the question in India. The glycerine bile method is next reviewed and rejected, because of the slowness of its action, and the necessity for a second injection ten days after the first. Captain Rogers rightly urges that the simplest possible method will be the best in this country, and he considers it probable that "the serum method or a modification of it, so as to give but a very slight attack of the disease with a sufficiently long consequent immunity, will be best suited to the conditions met with in this country, especially as the protection will be obtained in a very few days. Moreover, the serum in larger doses can be used as a curative measure in early cases of the disease, if a sufficient quantity is available, a matter of the greatest practical importance."

The writer then goes on to give a full account of the experiments he has conducted with Indian cattle, which will well repay perusal by all who are interested in cattle. Here, however, a bare outline is all that we have space for. We may, therefore, pass over the interesting, though hitherto commercially unprofitable, results of the various other experiments, to deal with what promises to be a most important advance, so far as the interests of the Indian agriculturist are concerned. The method of Turner and Kolle, which we have described above, was carried out in the Muktesar Laboratory—which was recently burned down—with the result that 30,000 cubic centimetres of serum were manufactured in a comparatively short time. The serum so obtained was then tried experimentally on cattle, with the most gratifying results. It was discovered that whereas cattle from the plains were comparatively easily protected from rinderpest by the serum, the hill cattle required much larger doses to protect them. It was, however, merely a question of dose, and given large enough doses, the hill cattle could be as effectively protected as the plain cattle. In each of the experiments mentioned above the rinderpest test was carried out by the injection of a dose of virulent blood subcutaneously, the most certain way of producing the disease in an unprotected animal, and yet, given sufficient doses of the serum, the cattle showed no signs of the disease. A most interesting and important feature of the inquiry was the practical application of the method to the cattle of infected villages. The villagers readily assented to the experiments being carried out, and allowed blood to be taken from a diseased animal for the purpose. The result was most gratifying, since not one of the inoculated animals contracted the disease, while of the uninoculated a number suffered from rinderpest, and several died.

From what has been said it will be obvious that though Captain Rogers neither claims nor has attained finality in his results, he has nevertheless done enough to show that the method he advocates is a practical one, which promises to very materially diminish the great mortality from rinderpest in this country. It will, however, be first necessary for Government to obtain a sufficient organisation to put into practice the important outcome of the experimental work we have alluded to.

AN INTERESTING MILK PROSECUTION.

The first prosecution of any importance to the milk-vending trade reached a definite stage last week, when a Sydney Dairyman was fined at Newtown, by Mr. Isaacs, a Sydney P.M., for selling milk below the strength laid down in the Public Health Act.

The case was commenced six weeks ago and concluded last week. William Liddell, Inspector under the Health Act for the Borough of Marrickville, proceeded against Alfred Wedlock, registered dairyman, of Marrickville, for that he did by his servant, John Wedlock, sell to the said William Liddell an article of food, to wit milk, the same not being of the quality of food demanded by him in terms of section 62 of the Public Health Act of 1896. Mr. Ralston, instructed by Messrs. Norton & Co., appeared to prosecute; and Mr. Ferguson, instructed by Messrs. Deane and Deane, appeared for the defendant. Evidence was given by the inspector of the purchase of the milk and the submitting of the same to the Government Analyst for analysis. In answer to Mr. Ferguson, the inspector stated that defendant's cattle were in excellent condition, and had the appearance of being well fed. The dairy premises were kept in splendid order. The cows were stall fed, and appeared to receive every care and attention.

Mr. Hamlet, Government Analyst, stated that he had made an analysis of the milk in question. The milk was below the standard notified by the "Gazette." The deficiency of total solids was ·47 per cent. The fat was deficient ·45 per cent. The solids not fat were deficient ·02 per cent. The material difference was in the fat. He could only account for the absence of the fat by its abstraction by dilution or skimming. The standard given was a low one, and in favor of milkmen. He had received a number of authentic samples from veterinary inspectors. He had seen samples actually taken from the cow, which he had analysed, and found that they averaged 3·8, sometimes over 4·, and evening milk up to 5·. These samples had been taken at all times of the year and in all weathers. As a result of these investigations he fixed the standard approved by the Board of Health. Morning milk contained less fat than evening milk. Cold, wet weather practically made no difference in the quality of milk. He took samples from his own cow which averaged 13 per cent of solids and over 4 per cent. of fat. The fat in the milk comes from the food that the cows take. It would take six hours to make a complete analysis of milk, and could only be done by an expert. The English standard for solids had gradually fallen from 9·5 to 8·25. They had no standard for fat in England.

For the defence, evidence was given by the defendant that he spared no effort to get the best cattle and the best feed for them, irrespective of price, in order to make his dairy a model one,

The milk was delivered to his customers direct from the cow, and he at no time had ever received the slightest complaint from any of the 400 persons he served. Other witnesses corroborated the testimony of the defendant as to the milk being delivered to the customers direct from the cow, and that complaints were at no time received as to the quality of the milk supplied.

Henry Wilson, manager of the dairy department of the Fresh Food and Ice Company, stated that he had acted as judge at many Shows. Defendant exhibited his cows, and won prizes with them. The method of feeding described by defendant, and the nature of the food mentioned, was as good as it could be for stall-fed cattle. Of course, grass was the best of all food for milk purposes.

Mr. Ferguson submitted that to be an offence under the Act it must be one of adulteration, and the evidence showed the very opposite. The milk was sent out direct from the cow in a pure state, and that was what the Act required of the vendor, and nothing more. If in this case a fine was imposed the defendant was injured in the eyes of his 400 customers, not one of whom, if they were in Court and heard the evidence, would believe that they had received anything else but pure milk.

Mr. Isaacs said that whatever might be his decision he was satisfied that the milk had not been tampered with after it left the cow, and before it was delivered to the consumer.

Mr. Ralston submitted that all he had to prove was that the milk was not up to the standard provided by the Government. That had been done, and he asked for a conviction.

Mr. Isaacs said he considered that the only question he had to decide was whether this milk was up to the standard fixed by the Government on the recommendation of the Board of Health. He, however, stated expressly that he considered that this milk was sold as it was taken from the cow, and that defendant had done his best—and more than 99 out of every 100 milk vendors did—to supply his customers with milk of the best possible quality. He was sure that defendant's *bona fides* was perfectly clear, but as the milk was not up to the required standard he would convict the defendant and order him to pay a minimum penalty of 5s., with 21s. professional costs, and 10s. 6d. analyst's fees added, in default levy and distress. The defendant intimated his intention of appealing to the Supreme Court on the decision.

The points relied upon by Mr. Ferguson, the defendant's counsel, in his appeal are as follows:—

The Public Health Act of 1896, s. 62, provides (*inter alia*) that: "Every person who to the prejudice of the purchaser sells any food or drug which is not of the nature, substance or quality of the food or drug demanded by such purchaser shall be liable to a penalty not exceeding £20."

Section 63 provides that "Any person who sells a food or drug shall deliver the same to the purchaser in its pure state." A breach of this section is deemed an offence under the preceding section.

Wedlock, the defendant in this case, was charged under the 62nd section with selling to the prejudice of the purchaser an article of food, to wit, certain milk, the same not being of the quality of food demanded by him.

Section 53 of the Act empowers the Governor, on the recommendation of the Board of Health, to fix limits of strength and purity for articles of general consumption, but it does not go on to make it an offence to sell articles which are not in conformity with this standard. In pursuance of this section the Governor has fixed the standard of milk as follows:—Natural milk solids to be not less than 12 per cent, of which the fat shall be three-and-two-tenths per cent. Wedlock's milk fell short of this standard in butter fat and other solids, and the magistrate held that this constituted an offence under the Act, although it was proved to his satisfaction that the milk was sold as it came from the cow, without anything added to or taken from it; that the cows were of the best possible quality, fed in the best possible way, and that everything possible was done by the defendant to get the best milk.

The defendant's contention was that though the law authorised the fixing of a standard, there was nothing in the Act to make it an offence to sell milk which deviated in quality from the standard, and that having sold pure milk fresh from the cow he had thereby supplied a customer who asked for milk with milk of the quality demanded by him.

FIBROUS PLANTS.

(*Continued.*)

While 30 or 40 species of plants supply the world's demand for commercial fibres, hundreds of fibrous plants could readily be enumerated, the simple fibrous matter in many of which to outward appearance is just as good as the fibre of the commercial species widely cultivated. There are many wild plants for instance which produce fibre stronger and better than jute. Such plants have been the subject of constant enquiry, and in considering them as a source of fibre there are many points to be taken into consideration. We should enquire whether the plant is capable of successful cultivation, what its uses will be in manufacture, what commercial fibre it will replace or be a substitute for. In fact this latter point is the most important to be settled, for the present commercial fibres represent in a sense those that have stood the test of experience, and until these are crowded out by new conditions, or through what might be termed evolution in the economic arts, they will have no chance. The only opportunity which may be afforded these secondary forms is in the creation of special uses to which they may be peculiarly adapted, for which the standard forms known to the market are not so well fitted. Should a fibre be "promising" it would need to be subjected to chemical and microscopic study to determine the length of the ultimate fibre cell, the proportion of cellulose, and any other elements which would give it its rating among textiles. By such technical study we are enabled to obtain direct knowledge of the species, and in a measure to avoidlong and costly economic experimentation.

Experiments for the developments or extension of vegetable fibre industries under Governmental

auspices or direction have been instituted at different times in many countries, and such experiments date back nearly one hundred years. In some instances these have been confined to testing the strengths of native fibrous substances for comparison with similar tests of commercial fibres, as the almost exhaustive experiments of Roxburgh in India early in the present century. Another direction for Government experimentation has been the testing of machines to supersede costly hand labor in the preparation of the raw material for market, or in the development of chemical processes for the further preparation of the fibres for manufacture, or in microscopic and chemical investigation. The broadest field of experiment, however, has been the cultivation of the plants, either to introduce new industries as sources of national wealth or to economically develop those which require to be fostered.

The introduction of ramie culture is an example of the first instance, the fostering of the almost extinct flax industry of our grandfathers' days an illustration of the second.

The United States Government has conducted experiments or instituted enquiries in the fibre interest at various times in the last fifty years, but it is only since 1890 that an office of practical experiment and inquiry has been established by the Department of Agriculture, that has been continued through a term of years. This is known as the Office of Fibre Investigations. The work of this branch of the Department of Agriculture has been mainly directed towards the development or introduction of those fibres which we do not produce commercially, but which are capable of cultivation in the United States, and which will add to our national resources. This work has been prosecuted by the importation and distribution of the seeds of fibre plants, by encouraging and directing field experiments, by testing fibre machines and by affording information, both through personal correspondence and through a series of publications.

CIRRHOSIS, CHRONIC INTERSTITIAL HEPATITIS, OR CHRONIC INDURATION OF THE LIVER.

This is a chronic disease in which the liver becomes hardened, it may be increased or diminished in size, depending on the particular phase of the morbid process. The interstitial or connective tissue takes on a slow form of inflammation, and a very active over-growth, which leads to a general compression and atrophy of the secreting cells, and a hindrance to the flow of blood through the liver. The liver is hard and tough, giving, in many instances, a distinct grating sound when cut; the cut surface presents a variable appearance depending on the particular stage of the pathological process. "When cirrhosis is old, the surface of the liver is granulated and irregular, sometimes covered with new membranes; the serous membrane is thickened, whitish and opaque. At the beginning the colour of the liver is nutmeg-brown; later it turns light yellow, and the organ becomes anæmic. On section we find a fibrous network formed by the thickened connective tissue, a network the principal traces of which circumscribe more or less large fields of the atrophied hepatic paren-chyma, whilst its ramifications separate the various hepatic lobules. . . . With these alterations of the liver we find also a passive hyperæmia and a chronic catarrh of the stomach and intestine, ascites, anasarca, congestion of the meninges, and hæmorrhages in different organs."*

Chronic inflammation of the liver, although very prevalent amongst horses which graze on the veld in some districts of the Colony, is not so frequently met with amongst cattle which feed solely on the veld, although many cases do occur, such as has already been referred to. The disease is very common, however, amongst cattle which are either wholly or partially fed in the stable, especially amongst milch cows. In some instances cases of chronic hardening of the liver are met with in which no previous history of any acute attack can be obtained, but in the great majority of cases, in which the animals have been under close observation by the same owner for some considerable time, the animals have suffered from one or more previous attacks of the illness, which indicated the presence of acute congestion or inflammation of the liver. A rather unusual case of this character occurred recently. The patient was a pure bred red polled cow which was imported about six months ago. She calved, either on board the steamer or immediately after her arrival, and suffered from derangement of the digestive organs for some little time after. She recovered, however, and appeared to be doing fairly well, until about three months after, when she had an acute attack of inflammation of the liver. She made a slow and somewhat irregular recovery from this attack; her appetite remained delicate, and her bowels somewhat irregular. Latterly, however, her owner reported that she was doing much better and feeling well. This continued until about five days before she died, when she became suddenly ill, and manifested symptoms of acute constipation. Suitable aperients were administered, but after four days' illness she began to strain violently. When examined the day that she died by Mr. Spreull, she was found lying down with her head turned round on her shoulder persistently; her breathing was quick, and she strained continuously as if wanting to expel something; her temperature was 106·2. The rectum was inflamed, and contained a mixture of blood, slime, and a little very black fæces, but no injury could be detected. The stomachs were not full, nor was the abdomen tympanitic. She died very suddenly. The postmortem examination revealed the gall-bladder but ductus choledochus —the bile duct leading from the gall-bladder enormously enlarged and distended to its utmost capacity; its contents measured fully one gallon. Its wall were much thickened and inflamed, but the ductus choledochus—the bile duct leading from the gall-bladder to the duodenum—was not obstructed, but narrowed. The greater portion of the contents of the gall-bladder closely resembled the white of an egg in its character and consistence and was of a light lemon colour.

* Friedberger and Frohner.

There was a sedimentary portion which formed about a tenth of the whole; this was of a yellow colour and flacculent in its character, corresponding to the yolk of the egg. The liver was very hard, grated when cut, and was smaller than normal. The cut surface presented a grey mottled anaemic appearance, and the thickened bands of connective tissue could be plainly seen with the naked eye. The first, second, and third stomachs were normal and full of food of a soft consistence, due principally to the medicines administered. The fourth stomach was inflamed, and numerous petechae on the rugae or folds of the lining membrane. The duodenum was but slightly inflamed, but there was severe congestion and inflammation of the rest of the small intestines. They contained a blood-coloured watery fluid. The carcum was not much inflamed, and there was little inflammation of the colon, but the coats of the large bowels were infiltrated from $\frac{1}{4}$ to $\frac{1}{2}$ an inch thick with a pale yellow serous fluid. This infiltrate was abundant in the mesentery and loose tissue around the coils of the large intestines. The rectum was inflamed and the abdominal cavity contained about half-a-pint of a pale sherry-coloured fluid. The spleen, kidneys and lungs appeared normal. The urinary bladder was full of urine of a rather deeper colour than natural. The heart was pale but firm; there were large blood extravasations under the endocardium of the left ventricle, and numerous punctiform haemorrhages under the epicardium.

Symptoms.—As already remarked, animals may be affected with cirrhotic livers in an advanced stage without manifesting any prominent symptom indicating its presence, but there is generally irregularity of the bowels—constipation alternating with diarrhœa; a somewhat delicate and variable appetite. In one herd of dairy cows which I had under observation for some time, and in which over twelve consecutive cases occurred at comparatively short intervals, one prominent symptom which was noted on close observation was frequent grinding of the teeth. These cows ate and ruminated very much as usual, their appetites were not so keen perhaps as they should have been, and their fæces were rather firmer than natural, considering the food which they were receiving, but with the exception of this occasional grinding of the teeth, which was observed a number of days before any other symptom became manifest, an ordinary observer would not have detected anything amiss with these cows. In this particular instance the grinding of the teeth was perhaps due more to the indigestion which was associated with the cirrhosed liver, than to the pain and uneasiness caused by the condition of the liver itself, as in nearly all these cases the acute symptoms were ushered in by diarrhœa and a catarrhal condition of the stomach and bowels, which we found great difficulty in controlling. In the more ordinary cases the animal continues to feed and ruminate as usual, until it suddenly manifests symptoms of acute indigestion and liver complications, associated with constipation. After administering the usual purgative medicine, and the bowels have acted freely, the patient may appear relieved and commence to feed a little, but frequent relapses occur, and although temporary improvement may follow the judicious administration of saline medicine, the patient, as a rule, becomes gradually more and more emaciated; dropsical swellings appear in front of the chest and between the fore legs extending towards the abdomen. In more favourable cases, by careful dieting, and the frequent use of saline medicines, the animal may be maintained in fairly good health and condition for many months. But injudicious feeding will at any time bring on an acute attack which may terminate fatally in two or three days.

Treatment.—The treatment of chronic induration of the liver, when such a condition is suspected, either from previous attacks of an acute character, or from the general sypmtoms, can only be palliative, and consists principally in regulating and arranging the diet, so as to avoid over-loading the stomach, and keep the bowels in a laxative condition. To maintain the latter, an occasional pose of sulphate of soda (Glauber's salts)—from qalf a pound to a pound—may be given, or when the oows can be tempted to eat it, about two ounces of salt may be dissolved in a little boiling water and added to a small bran mash every morning or every second or third morning as may be required. A tablespoonful of common salt should be given daily. When acute symptoms appear, these should be treated in the same manner as recommended for acute inflammation of the liver, by giving first a dose of calomel followed by repeated doses of Glauber's salts as may be necessary to keep the bowels acting. It will be evident from what has been said that when an animal has just recovered from an acute attack of indigestion, congestion of the liver, or any serious derangement of the digestive organs, it is a great mistake to force all kinds of food upon it, combined with tonic medicines, in order to stimulate its delicate and defective appetite, as is usually done. The treatment which such an animal re-requires is not medicine so much as a light nourishing diet of a laxative character, given in small quantities and at short intervals. A little laxative medicine judiciously administered occasionally will relieve the debilitated and congested organs, and assist their defective action. An excellent stimulant under such conditions is the carbonate or chloride of ammonium, which may be given along with gentian and ginger in the following doses:—

Powdered Chloride of Ammonium	..	$\frac{1}{2}$ ounce.
" Gentian root	..	2 drachms.
" Ginger ..	..	2 "

Mix in a bottle of thin linseed or oatmeal gruel, and give twice a day. The carbonate of ammonia may be substituted for the chloride if the animal is weak in addition to having a delicate appetite. But the principal consideration is the regulation and selection of the diet in all such cases. Remember that the habitual tendency of all that goes on in the animal body is always in the direction of health. This is the inherent beut of all the vital powers and processes of the animal organism. The object of medicine, therefore, is to assist this "healing power of nature," as it is called, and one of the principal means of doing that is to remove every obstacle to the free action of this health-restoring force.

If an animal is dull and depressed with a feeble appetite arising from a sluggish liver, it is not a stimulant that it wants, but a dose of opening medicine to relieve the congested liver and the inactive bowels, and by careful feeding to prevent a recurrence of these conditions.

D. HUTCHEON, C.V.S.

GENERAL ITEMS.

The *Town and Country Journal* lately published the following method of pasteurising milk:—The vessel containing the milk, which may be the bottle from which it is to be used or any other suitable vessel, is placed inside of a larger vessel of metal, which contains the water. If a bottle, it is plugged with absorbent cotton, if this be at hand, or, in its absence, other clean cotton will answer. A small fruit jar, loosely covered, may be used instead of a bottle. The requirements are simply that the interior vessel shall be raised about half-an-inch above the bottom of the other, and that the water shall reach nearly, or quite, as high as the milk. The apparatus is then heated on a range or stove until the water reaches a temperature of 155 degrees Fahr., when it is removed from the heat and kept tightly covered for half-an-hour. The milk bottles are then taken out and kept in a cool place. The milk may be used at any time within 24 hours. A temperature of 150 degrees maintained for half-an-hour is sufficient to destroy any germs likely to be present in the milk, and it is found in practice that raising the temperature to 155 degrees and then allowing it to stand in the heated water for half-an-hour, ensures the proper temperature for the required time. The temperature should not be raised above 155 degrees, otherwise the taste and the quality of the milk will be impaired. The simplest plan is to take a tin pail, and invert a perforated tin pie-plate in the bottom, or have made for it a removable false bottom perforated with holes, and having legs half-an-inch high, to allow circulation of the water. The milk is set on this false bottom, and sufficient water is put into the pail to reach the level of the surface of the milk in the bottle. A hole may be punched in the cover of the pail, a cork inserted, and a chemical thermometer put through the cork, so that the bulb dips into the water. The temperature can thus be watched without removing the cover. If preferred, an ordinary dairy thermometer may be used, and the temperature tested from time to time by removing the lid. This is very easily arranged, and is just as satisfactory as the patented apparatus sold for this purpose.

We (says the *Queensland Agricultural Journal*) have begun an industry in the Colony which is rapidly expanding and which promises ere long to rise to great importance. This is the Coffee-planting industry. Few people need be told that while many years ago Coffee-planting was the principal industry in Ceylon, at the present day coffee in that island is a thing of the past, owing to the ravages of the parasitic fungus (*Hemileia vastatrix*) known as the Coffee leaf-disease. Of late years spasmodic attempts have been made to revive the industry, but without avail. The existence of wild coffee in the jungle operates against the planters. The disease remaining with the plants cannot be eradicated, and what was once a source of great wealth to the planters and consequent prosperity to Ceylon has had to be finally abandoned, and cinchona, cacao, (*sic*) and tea have successively taken the place of coffee.

The amount of water absorbed by large trees is very considerable, and hence ring-barking has a marked effect on the grass. The destruction of heavy timber over a large area of country has, notwithstanding all that has been said to the contrary, the effect of reducing the rainfall, particularly in flat country. But the water beneath the surface, which went to nourish the growing trees, is, after the latter are destroyed, left to nourish by capillary attraction the roots of the grass, which grows more luxuriantly in consequence. Not unfrequently springs burst forth spontaneously in ring-barked country, owing to the superabundance of subterranean water now no longer expended in supplying the trees.

The latest method of destruction of ants is said to be the use of gasoline. Pour about a half-pint of gasoline into the ant hill or nest, and set it afire. The gasoline will instantly spread through all the nest, and, as the heat on the surface increases, the gas will generate from the utmost recesses, and the fire will cook the ants. Half-a-pint of gasoline will burn from three to eight hours, and kill every ant in the largest nest, as well as all which attempt to enter it from without.

Here is another remedy:—When it is a big mound nest, pour a little bisulphide of carbon down each hole and throw a wet bag over the nest immediately afterwards. Remove it in a couple of minutes and apply a lighted stick over each opening. The fumes explode, wreck the nest, and burn all the ants beneath. Care must be taken not to put too much bisulphide near the roots of fruit trees, as it will destroy them. Also, as it is very inflammable, no light or spark should be allowed to be near the bottle, which should be kept corked. It is well to have the lighted stick five or six feet long, though even if the nest explodes near the land no harm would be done.

A farmer, writing to the *New York Tribune*, says:—Eight years ago I lost about one-third of my crop of corn and cow peas on account of the weevil, but luckily I made a discovery that has been worth many dollars to me since. During the same year I sacked up a lot of cow peas, and about one-fourth of the sacks used were salt sacks, with the salt still clinging to them. When I was ready to market the peas I unsacked the lot, and found to my surprise that the peas in the salt sacks were in perfect condition, while those in the other sacks were almost destroyed by the weevil. When I gathered my grain crops the next fall I used salt sacks entirely with the same success. It is the custom in this section to put the corn in the barn with the shuck on, and the consequence is that a great many insects secrete themselves in the shuck and afterwards destroy a great deal of

grain. Knowing this I dissolved 1 quart of salt in 2 gallons of water, and as the corn was thrown in the barn I gave it a light sprinkling. I was not bothered with any insects that year, and of course I have continued to use the salt remedy ever since with the best of results.

It is generally thought by household authorities that brown-shelled eggs are superior to the white-shelled varieties. An investigation has been made into the relative merits of the two kinds of eggs at the Californian Experiment Station, with the result that the impression that brown-shelled eggs are richer is not borne out by chemical analysis. Further, a physical examination proves that the main points of superiority, though extremely slight, are possessed by the white-shelled eggs. But practically there is no difference so far as the food value is concerned, between the two classes.

It is a troublesome question to know what to do with the flies this summer. This is the best method of destroying them that we know of. Take half-a-teaspoonful of black pepper in powder, 1 teaspoonful of brown sugar, and 1 teaspoonful of cream; mix them well together, and place in the room on a plate when the flies are troublesome, and they will soon disappear. Cold green tea made very strong and sweetened with sugar will also, where set about the room in aucers, attract flies and destroy them.

The results of a series of experiments on the preservation of eggs are published in the *Berliner Markthallen Zeitung.* Fresh eggs were treated by twenty different methods in June, and after being allowed to remain eight months were examined at the end of February, In only three of the methods employed did all the eggs remain sound. These were (1) covering with vaseline, (2) preserving in lime water, (3) preserving in a solution of silicate of potash. The treatment with vaseline, however, is a tedious business, submersion in lime water induces a disagreeable flavour, and the use of silicate of potash renders the shell extremely brittle so that it is expedient to pierce it with a needle before putting it into boiling water for cooking. Whichever be the method employed, it is desirable that only non-fertile eggs should be subjected to the process of preservation. Twenty per cent. of the eggs went bad that had been (1) covered with lard, (2) preserved in wood ashes, (3) varnished with shellac, (4) put in a mixture of boric acid and silicate of potash, or (5) treated with permanganate of potash. Of eggs varnished with silicate of potash or with collodium, 40 per cent turned bad. Of eggs that had been plunged for 12 to 15 seconds in boiling water, or immersed in a solution of alum, or in a solution of salicylic acid 50 per cent. were found to be bad. Of eggs rubbed with salt, or preserved in bran, or covered with paraffin, or treated with a mixture of salicylic acid and glycerine, 70 per cent. went bad. Of eggs wrapped in paper 80 per cent., and of eggs kept in salt water 100 per cent., were found to be bad.

Place 4 lb. of unslacked lime, 1 lb. of salt, and 1 oz. of cream of tartar in an earthen jar; then add 3 gallons of boiling water, stir well and allow the mixture to stand for two days, when it is ready to receive the eggs. The vessel should stand in a cool place where it is not likely to be disturbed. There should be quite 2 inches of the liquid standing above the top layer of eggs. As the water evaporates, add cold water up to where it previously stood in the vessel.